CIVIL DISTRICT COURT FOR THE PARISH OF ORLEANS
STATE OF LOUISIANA

NUMBER 96-8461 DIVISION "K" DOCKET NO. 4

GLORIA SCOTT AND DEANIA JACKSON,
on behalf of themselves and all
other persons similarly attended,
Plaintiffs,

vs.

THE AMERICAN TOBACCO COMPANY, INC., et al,
Defendants.

IN THE CIRCUIT COURT OF OHIO COUNTY, WEST VIRGINIA
IN RE: TOBACCO LITIGATION

Civil Action No. 00-C-6000

COPY

VIDEOTAPE
DEPOSITION OF: KENNETH MARC LUDMERER, M.D.
DATE: Wednesday, October 18, 2000
TIME: 10:24 a.m.
LOCATION: Dechert, Price & Rhoads
30 Rockefeller Plaza
New York, New York
REPORTED BY: ABNER D. BERZON,
Registered Professional Reporter

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APPEARANCES OF COUNSEL:

ATTORNEYS FOR THE PLAINTIFFS
IN THE BLANKENSHIP CASE

NESS, MOTLEY, LOADHOLT,
RICHARDSON & POOLE, ESQS.
BY: JERRY HUDSON EVANS, ESQ.
28 Bridgeside Boulevard
P.O. Box 1792
Mount Pleasant, SC 29465
(843) 216-9000

ATTORNEYS FOR THE PLAINTIFFS
IN THE SCOTT CASE

CLIMACO, LEFKOWITZ, PECA,
WILCOX & GAROFOLI CO., L.P.A.
1228 Euclid Avenue, Suite 900
Cleveland, Ohio 44115-1891
BY: JACK D. MAISTROS, ESQ.

ATTORNEYS FOR THE DEFENDANT
IN THE SCOTT CASE

PHILIP MORRIS
DECHERT, PRICE & RHOADS
30 Rockefeller Plaza
New York, New York 10112-2200
BY: WILLIAM K. DODDS, ESQ.
(212) 698-3500

ATTORNEYS FOR THE DEFENDANT
IN THE SCOTT CASE

PHILIP MORRIS AND LORILLARD
SHOOK, HARDY & BACON L.L.P.
One Kansas City Place
1200 Main Street
Kansas City, Missouri 64105-2118
BY: TIMOTHY E. CONGROVE, ESQ.
TAMMY B. COKER, ESQ.
(816) 474-6550

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A P P E A R A N C E S (Continued):

ATTORNEYS FOR DEFENDANT
IN THE SCOTT CASE
LORILLARD
THOMPSON COBURN, LLP
One Firstar Plaza
St. Louis, Missouri 63101
BY: J. WILLIAM NEWBOLD, ESQ.

ATTORNEYS FOR THE DEFENDANTS
IN THE SCOTT CASE
R.J. REYNOLDS AND SELLER

BOWLES, RICE & McDAVID,
GRAFFE & LOVE
600 Quarrier Street
Charleston, West Virginia 25325-1386
BY: FAZAL SHERE, ESQ.
(Via telephone)

ATTORNEYS FOR PLAINTIFF BLANKENSHIP
SEGAL LAW FIRM
810 Kanawha Boulevard East
Charleston, West Virginia 25031
BY: DEBORAH L. McHENRY, ESQ.
(Via telephone)

ATTORNEYS FOR DEFENDANT LORILLARD
FARRELL, FARRELL & FARRELL
914 Fifth Avenue
Huntington, West Virginia 25701
BY: SUSAN MORTON, ESQ.
(Via telephone)

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A P P E A R A N C E S (Continued):

ATTORNEYS FOR DEFENDANT PHILIP MORRIS
ALLEN, GUTHRIE & McHUGH
707 Virginia Street East
Charleston, West Virginia 25301
BY: JOHN McHUGH, ESQ.
(Via telephone)

ATTORNEYS FOR DEFENDANTS BROWN & WILLIAMSON
JACKSON & KELLY
PO Box 5533
Charleston, West Virginia 25322
BY: ROGER WOLFE, ESQ.
(Via telephone)

A L S O P R E S E N T:

THOMAS HARTMAN, Videographer

* * *

(INDEX AT REAR OF TRANSCRIPT)

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LAWYER'S NOTES

A. WILLIAM ROBERTS, JR. & ASSOCIATES

Page Line

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STIPULATION

It is stipulated by and among Counsel that this deposition is being taken in accordance with the Federal Rules of Civil Procedure; that all objections as to Notice of this deposition are hereby waived; that all objections except as to form are reserved until the time of trial; and that this witness has reserved the right to read and sign the deposition after review by counsel.

*****

THE VIDEOGRAPHER: This is the videotape deposition of Kenneth Ludmerer, M.D. taken by the plaintiff. This is a double litigation case. The first case is "In Re: Tobacco Litigation," In The Circuit Court of Ohio County, West Virginia, No. 00-6000.

The second case is entitled, "Gloria Scott and Deania Jackson vs. American Tobacco, Inc., et al," Civil District Court for the Parish of Orleans. This is No. 96-8461.

Today's deposition is being held at 30 Rockefeller Plaza New York, New York on October 18th, 2000.

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My name is Thomas Hartman. I'm the videographer. The court reporter is Abner Berzon. We are associated with the firm of Veritext Court Reporting with offices located at 4 Becker Farm Road Roseland, New Jersey.

The time is 10:20 a.m. Counsel is going to introduce themselves, after which the court reporter will swear in the witness.

MR. EVANS: I'm Jerry Evans with Ness Motley for the plaintiff in the West Virginia case.

MR. MAISTROS: Jack Maistros with the Climaco law firm in Cleveland for the plaintiffs in the Louisiana case.

MR. DODDS: My name is William Dodds with Dechert and I represent Philip Morris.

MR. NEWBOLD: My name is Bill Newbold with Thompson Coburn in St. Louis representing Lorillard in the Blankenship West Virginia case.

MR. CONGROVE: Tim Congrove of Shook, Hardy & Bacon, Kansas City, Missouri. We're representing the defendants Philip Morris and Lorillard.

MS. COKER: Tammie Coker of Shook,

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Hardy & Bacon, Kansas City, Missouri, for defendants Philip Morris and Lorillard in the Scott case.

MR. DODDS: On the phone, could you please enter your appearance.

MS. McHENRY: Debora L. McHenry, the Segal Law Firm, representing the plaintiffs in the Blankenship matter in West Virginia.

MR. SHERE: Fazal Shere from the law firm of Bowles, Rice & McDavid representing R. J. Reynolds and the Seller defendants.

MR. McHUGH: John McHugh from Allen Guthrie & McHugh in Charleston representing Philip Morris in the West Virginia case.

MR. WOLFE: Roger Wolfe with Jackson Kelly in Charleston, West Virginia, representing Brown & Williamson.

MS. MORTON: Susan Morton with Farrell, Farrell & Farrell in Huntington, representing Lorillard.

THE VIDEOGRAPHER: Swear in the witness.

* * *

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KENNETH MARC LUDMERER, having first been duly sworn by Abner D. Berzon, a Notary Public of the State of New York, was examined and testified as follows:

DIRECT EXAMINATION BY MR. EVANS:

Q. Good morning, Dr. Ludmerer. Thank you for your patience this morning. It takes a while to get a lot of people on the record and I appreciate your patience.

I introduced myself on the record. I am Jerry Evans. I'm from Charleston, South Carolina representing the plaintiffs in the West Virginia medical monitoring action.

I'm going to be asking you questions today. If at any time you don't understand my question, please let me know. If you answer, I will assume that you have understood my question. If you need to take a break at any time please let me know and I'll be happy to accommodate you.

If I ask a yes or no question, I would appreciate you to begin your answer with a yes or no and then follow with any explanation you feel is appropriate.

Is that agreeable to you, sir?

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A. Agreeable to me.

Q. Good. Dr. Ludmerer, I have been provided with a CV which bears a date of November 1999 and let me ask you: To your knowledge, is this your most current, up-to-date CV?

A. That's correct. I simply have not updated it since then.

Q. Okay. Well, I am going to ask the court reporter to mark this as Exhibit No. 1, please.

(Plaintiff's Ludmerer 1, CV, marked for identification, this date.)

Q. Dr. Ludmerer, can you confirm that this is your CV?

A. It is.

Q. Let me ask you a couple of questions about your education. You're listed as having an AB degree from Harvard College in History and Science. And I just wanted to clarify. Was that a double degree or is History and Science a particular degree field?

A. That was a particular degree field and still is at Harvard College.

Q. And also your master's degree from John Hopkins is in History of Medicine?

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A. Correct.

Q. Is that also a separate degree unto itself that would be different from a history degree?

A. It's a graduate degree. It's a separate degree.

Q. You are currently listed as a professor of medicine and of history at Washington University. Do you currently teach courses in the history of medicine?

A. Yes, I do.

Q. What's the exact title of your most current courses?

A. The most current course in the arts and science campus is a seminar on the History of the American Medical Profession and I'm also teaching a course at the medical school this spring, and, to tell you the truth, I don't remember what we decided to call it, but it has to do with the past, present and future of American medicine.

Q. Do you teach any courses in history that do not deal with the history of medicine?

A. No.

Q. Have you ever?

A. No.

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Q. Have you ever done any teaching on the subject of tobacco in relationship to the history of medicine?
A. No.
Q. Any teaching at all on the subject of smoking and health?
A. You mean lecture-type teaching?
Q. Yes. Any type of lecturing or teaching.
A. Courses and that type of thing?
Q. Yes.
A. No, I have not.
Q. Looking on page 3 of your CV, this Awards and Honors, and I just notice that you received a research prize on the history of science department for an outstanding senior honors thesis, and I was just wondering what was the topic of that senior honors thesis?
A. The topic was the American Eugenics Movement.
Q. And very briefly, what was the subject matter of that topic on, that paper on the Eugenics Movement?
A. Well, it was a study of its rise and fall in the United States.

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Q. And approximately what time period did that cover, the rise and fall of the Eugenics Movement?
A. 1870 to the 1930's.
Q. And you listed a number of visiting professorships and invited lecturers on your CV as well. And let me just ask you: Did any of those visiting professorships or invited lecturers involve the topic of smoking and health?
A. No.
Q. And lastly, I notice a number of publications are listed here. Let me ask you if any of your publications deal with the subject of smoking and health?
A. No.
Q. Have you brought any documents with you today, doctor?
A. No.
Q. Do you keep any file of your work on this particular case, the West Virginia medical monitoring case?
A. No, I don't.
Q. Any correspondence at all that relates to this case that you have?
A. There's been no correspondence.

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Q. Do you keep billing records or invoices pertaining to your work on this case?
A. No.
Q. Are you charging for the time that you're spending in your work for this case?
A. Yes, I am.
Q. What is your rate for that?
A. $300 an hour.
Q. Approximately how many hours have you spent? And, again, I'm talking about preparation for the West Virginia medical monitoring case.
A. I haven't added it up yet, but several dozen.
Q. Several dozen. Three dozen, four dozen? Could you be any more specific.
A. You know, call it five dozen. I have not added these hours up yet.
Q. Can you estimate for me how many hours you've spent in preparation for any tobacco litigation related work in the Year 2000?
A. I had a trial appearance in May or June in Brooklyn and I don't recall precisely, but for order of magnitude, call it a hundred.
Q. And the approximately one hundred

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hours, that was all devoted to the case in Brooklyn that you were talking about?

A. That was the preparation and the review of materials, the several days, you know, in court, and then it got postponed and had to come back. You know that type of thing. I'm speaking from memory, but order of magnitude.

Q. I know that type of thing all too well.

What was the name of that case, if you recall?

A. I believe it was the Anderson case. Is that correct? I'm not certain, but I believe it was the Anderson case.

Q. Are you involved in any tobacco litigation related work currently, other than the two cases that you're appearing in connection with on this day?

A. There is one additional case that is active right now, in addition to these two cases here. And I can't tell you the name of the case; I don't know. But it's an individual smoker case in Brooklyn.

Q. Have you given any other trial testimony or deposition testimony this year other

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than the Brooklyn incident you just described for me?

A. No, I have not.

Q. What about last year, the year 1999; did you give any deposition or trial testimony?

A. I gave no deposition testimony. I did give one trial testimony.

Q. And what was that case?

A. That was the Williams case in Portland.

Q. And that was also an individual smoker case; is that correct?

A. That's correct.

Q. I know you were deposed in the Mississippi Attorney General action.

A. That's correct.

Q. Were there any other Attorney General state cases that you gave testimony in?

A. You mean deposition?

Q. Yes.

A. Or testimony?

Q. Deposition.

A. No court testimony. There was one additional deposition with in relation to the Attorneys General cases. That was for the State

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of Washington.

Q. And let me back up just a bit. We were talking about a number of hours you would spend, and we talked about the Year 2000. Last year, 1999, have you compiled records or can you give me an estimation of the total number of hours you spent in 1999 on tobacco litigation related work?

A. I don't recall precisely, but the number of hours involved for the Portland case was 70 or so.

Q. Were there any other cases other than the Williams case in Portland?

A. That was it.

Q. When were you first approached with the idea of doing research for a tobacco related case?

A. August of 1988.

Q. And by whom?

A. Murray Garnick.

Q. And he is with what law firm?

A. Arnold & Porter.

Q. And that was in connection with what case?

A. That was not in connection with any case.

Q. Okay. Can you describe for me what

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your assignment at that time or what you were asked to do at that time?

A. He approached me in the aftermath of the first Chipellone case. The trial had been completed and he inquired about my undertaking a project on the scientific knowledge from the scientific community about the health hazards of cigarettes and particularly in reference to lung cancer from the 1930 period to January of 1964, which, as you know, was the data of the first Surgeon General's report.

Q. And, Dr. Ludmerer, have you met with any attorneys in preparation for your testimony here today?

A. In preparation for this deposition?

Q. Yes.

A. Yes, I have.

Q. Who did you meet with?

A. I met with three of the four individuals on the left side of the table yesterday.

Q. Can you designate which three of those four.

A. With Tammie -- I'm sorry.

MR. CONGROVE: Tim.

A. Tim and Ned. And then there were a couple

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of other attorneys yesterday. Charles --

MR. DODDS: Cox.

A. -- Cox. There was one other attorney yesterday that I remember who was not here today.

MR. NEWBOLD: Jim Cox.

A. Excuse me Jim Cox. And Charles. Was he not an attorney?

MR. DODDS: Correct.

A. Correct. So there were two individuals yesterday who are not here today.

Q. So the total number of people you -- the total number of attorneys you met with was five? Have I counted correctly?

A. Correct. They were not all present at the same time. Some were in and out.

Q. Okay. About how long did the meeting go on?

A. Well, we began around 9:30, we finished around 4:30. Seven hours.

Q. And was that the only meeting you've had in connection with your testimony here today?

A. Yes.

Q. Were you shown any documents?

A. What type of documents?

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Q. Were you shown any documents at all?
A. No.
Q. So it wouldn't clarify things if I were to break down what types of documents?
A. I guess you're right. We did not go for any documents.
Q. What is your understanding of the nature of the West Virginia case? Or let me be a little more specific. What is your understanding of what the plaintiffs are seeking in this West Virginia case?
A. I actually know very little about the case itself.
Q. Okay.
A. It's my understanding that this has to do with medical monitoring of smokers, and that's the extent of my knowledge.
Q. You said you weren't shown any documents yesterday. But have you ever seen the complaint that the plaintiffs filed in this case?
A. No, I have not.
Q. Have you at any time seen any pleadings or documents filed in connection with this case?

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A. No, I have not.
Q. Have you reviewed the expert reports of any of the defendants' experts other than your own?
A. No, I have not.
Q. And have you reviewed any of the expert reports of any other of the plaintiffs' experts?
A. No, I have not.
MR. EVANS: Will you mark this, please, as No. 2.
(Plaintiff's Exhibit 2, expert disclosure, marked for identification, this date.)
Q. Doctor, I've asked the court reporter to mark as Exhibit No. 2 a two-page statement that was provided to us as your expert disclosure in this case. I'd like you to look at it and ask you a couple of questions.
Have you seen this document before?
A. Yes, I have.
Q. Did you in fact draft this statement?
A. I did not draft it.
Q. Did you -- do you know who did?

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A. I don't know for certain. I would hazard a -- if I were to hazard a guess, I would say Ned Dodds, but actually I don't know for certain.

Q. Were you ever shown a draft to which you made any sort of edits of this statement?

A. Quite frankly, I don't remember. I did see a draft of this at the time. But, as you know, a few cases have been going on at the same time and I don't remember if I did any editing of this before the final approval or if I approved this without asking for any editing. I simply don't remember.

Q. But does this statement in fact accurately reflect the matters you expect to testify to in this case?

A. Yes, it does.

Q. Let me ask you some specific things about it.

If you look at the second paragraph, it says, "Dr. Ludmerer is expected to explain principles of historical analysis. Specifically, he is expected to testify about historical analysis of developments in scientific and medical knowledge."

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And I realize this is going to be a broad question, but let's start out and then we can narrow it down.

Can you, based on this paragraph, can you explain the principles of historical analysis as they relate to developments in scientific and medical knowledge?

A. Yes, I could.

Q. Could you do that for me.

A. I would particularly identify five.

Q. Okay.

A. The first, being context, the importance of having a full intellectual, social, cultural context of the subject you're studying so you can put it in the appropriate framework and context; secondly, comprehensiveness; third, accuracy; fourth, an understanding -- and this is something that historians in medicine and historians of science study very hard to develop through years of training, and I did have additional historical training besides my master's degree at Johns Hopkins, but to develop an understanding of how scientific knowledge and medical knowledge evolves. And then lastly, avoiding hindsight.

Q. This paragraph says, "He will

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describe his application of these principles to his research on the state of scientific knowledge and belief regarding the relationship between smoking and health from the early 1900's to the mid 1960's."

Do the same principles apply to knowledge and belief or do you treat those two areas somewhat differently?

A. No, I'm saying that these are general principles that an historian in medicine or an historian of science would take into account into doing any project in a responsible, scholarly way, whether you're studying the history of an idea, a biographical study, the history of an institution, such as a medical school or hospital. My own particular interest were two recent books, the History of Medical Education in America. But these are general principles that you would apply in any project that you might undertake in the history of medicine.

Q. Okay. I understand that. And I take it you have applied those five principles to your research in this --

A. Correct.

Q. -- matter?

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A. Those were principles that guided me as I did my day-by-day work, and as I planned the project and as I executed it in 1988 when Murray Garnick contacted me.

Q. Since you did use the phrase "the state of scientific knowledge and belief," I do want to clarify. Are you using that phrase as sort of one unit of information, or have you made a distinction between scientific knowledge and, on the other hand, belief?

A. I'm not drawing a strong distinction between knowledge and understanding. You know, certain aspects of science are very factual and other aspects are more conceptual and theoretical and explanatory, but I am not really drawing a strong distinction between those two.

Q. Tell me about avoiding hindsight. Can you give me an example of how you applied this principle to some of your research and how you went about specifically attempting to avoid hindsight.

A. Well, hindsight is the conceit that we in the present have as we think about the past. And we typically think of -- we tend to believe that the past knew everything we did. You know, we

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ascribe our values and our attitudes to the past, and if they didn't know as much as we did, sometimes we say, well, they're silly, they're stupid. It's an important -- the issue is, for historians, is to understand that the past is in its own time. So, no, it's easy today to say, well, the stock market crash of '87 or 1929, every -- it was -- everyone should have sold; the signs were clearly there that there would be a crash. Well, except in the times, it wasn't so clear. It's easy today to say, well, if Los Angeles -- St. Louis Rams were going to be the football champion last year. Well, at the time it wasn't so clear who would win.

So we have to recognize that the past existed on its own terms, it didn't have the knowledge and understanding that we have today. We have to put it in the context of its times. So avoiding hindsight is closely related to this other principle of putting the subject you study in the appropriate context of the time and not to give the past the values and the knowledge and the understanding of the present.

Q. Give me an example of a study relating to tobacco and held from the time period

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you were researching that you had to guard against avoiding hindsight on? Does that question make sense?

A. Well, it's not the studies per say. My task is to interpret the past on its own terms, so that that question really doesn't make sense. The studies are there. My task as a scholar, as an historian, is to avoid hindsight and to put the studies in the context of the time, as opposed to pretending that they had information that later became available or that they existed in the environment of the present. So the onus is on me. The studies are there. The studies are raw data. Avoiding hindsight is the responsibility of the scholar, of the historian doing the work.

Q. You mentioned when you were first approached by Mr. Garnick to do this study, and I believe you said you were asked to study the time-frame from approximately the 1930's to the mid 60's; is that correct?

A. That's correct.

Q. And I have read other testimony you've given where you do talk about that same time period. I notice here you say you will be discussing the relationship between smoking and

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health from the early 1900's to the mid 1960's, and I just want to clarify: Have you expanded backward your time-frame to approximately 1900?

A. I noticed that now as we speak. More properly that should be 1930, and mid 1960's more properly would be January of 1964. So I have not gone back in time.

Q. So there's nothing in particular about the period from 1900 to 1930?

A. Correct. That's correct.

Q. Okay. Thank you for that clarification. I just got three decades out of my questions.

What -- again, this is perhaps a broad question, but we can narrow it down, but -- from there -- but what was the state of scientific knowledge regarding the relationship between smoking and health in the period of the 1930's?

MR. DODDS: I object to the form of that question. Go ahead.

A. Well, in specific, as I said, I was focusing on the possible relationship to lung cancer and what was understood about the cause of lung cancer. And you can look at that in two ways: If you are looking at lung cancer itself in

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the 1930's, you find a perceived increase in the incidence of that disease. It was not certain to investigators at the time whether this increase was a real increase or a perceived increase, better diagnosis as opposed to an actual increase of the disease. The cause of lung cancer was considered unknown and unknowable at the time. That's a very important point: Not only unknown, but unknowable, because it was felt that science did not have the tools to understand the cause of cancer.

If you look at things from the standpoint of cigarettes, smoking, there was no evidence to suggest a relationship between cigarette smoking and lung cancer at that time.

Q. Did anyone in the scientific community, based on your research, did anyone in the scientific community believe there was a relationship between smoking and lung cancer in the period of 1930's?

A. If you -- what years are you looking at?

Q. Period of 1930's.

A. Okay. If you are examining that decade, there were approximately two dozen causes that were hypothesized as the causes leading to lung

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cancer. So it is important to point out that cigarette smoking was among those two dozen causes that was listed as a possible cause of lung cancer. But it was not the only one. It was one of twenty or twenty-five causes.

It's also important to point out that there was no evidence linking any of these causes with lung cancer. So if you were to ask a bottom line conclusion, what is the cause of lung cancer, even in 1939, it would have to be, the consensus in the scientific community, was that it was unknown, even though there were a few people who speculated without evidence, hum, maybe it's cigarettes, but they didn't know and they didn't have any evidence, and the consensus view was that the cause is unknown, that it's unknowable because of the difficulties of studying this mystery of scien-- of cancer at that time, and the consensus was that there was no evidence linking cigarette smoking with lung cancer.

Q. Why was cigarette smoking one of the suspects, if there was no evidence to link it? Why did some people include it in their list of suspected causes?

A. Well, people start to speculate. I want to

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emphasize that speculation is ideas and brainstorming. It doesn't mean data. Most speculations are wrong. But this lung cancer is starting to be seen more frequently. Before 1930, it was a very rare disease. Now it is appearing in clinical practice more frequently, and this led people to wonder: What might have changed in Western Civilization to lead to this rise in lung cancer? One of the changes in culture, of course, and in society, was the increased spread of smoking during that time. So was automobiles, tarring of roads. There was a major influenza epidemic -- pandemic of 1918 and '19 that led to scarred lungs. There were many other factors as well, but one of them was cigarette smoking and it was -- you know, it's possible, maybe it is linked to cigarette smoking. On the other hand, there were literally tens of millions of cases of smokers and three thousand deaths from lung cancer around 1930's. So people also said, you know, if -- it's not very many cases; maybe it's something else.

Q. Does smoking as a suspect, does that show up in scientific literature? Does that show up among the list of suspected causes even

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though, as you said, there's no evidence linking?
A. Well, even "suspected" is a stronger term than I would use because even if you say you suspect it, that suggests some evidence, even circumstantial. I think it would be more accurate to say that in the 1930's there was a list of 20 to 25 causes that would be hypothesized as possible considerations, and it was on that list along with, as I say, other items as well. But the important point is to recognize that there was no evidence linking the two. It was just merely, hey, maybe it's smoking.
Q. I understand. Where did you come across that list of suspects?
A. I came across that list from my review of the world's literature.
Q. From scientific articles?
A. Scientific articles.
Q. Okay. When it was mentioned as -- when cigarette smoking was mentioned as a suspect, was there any suggestion of how one might go about furthering the knowledge on that link?
A. Not at that time.
Q. That's because, as you described it, as unknowable?

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A. Right. If you do what historians should do and put a subject into the context of the time, one has to recognize how undecipherable cancer was relative to the state of scientific methods of the 1930's. It was considered such a mystery that scientists were advised to avoid cancer research because if you want to progress in your career, you want to ask questions that are potentially answerable. And cancer was such a mystery, and the methods and tools weren't there, that it was considered unknowable. You go into cancer research, you're going to have a dead-end career, Dr. Jones; you better to pick another subject. If you're looking at the experimental side, remember, biochemistry is primitive, molecular biology has not begun, genetics as we know it today hasn't been there, immunology has not been developed.

So the laboratory tools to understand cancer on an experimental basis were not existent. And then, similarly, the epidemiological tools that later proved so useful and important in establishing the relationship between smoking and lung cancer and then later were used for other diseases as well, those techniques had not been invented yet either. That

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came much later. So there really was very little that a scientist could do methodologically to understand cancer. And this is reflected in the literature, and I reviewed the world's literature, article by article, every one, and what you see, if you look, there was a literature on lung cancer, but there is virtually no mention of cause, because they didn't have the tools to investigate cause. The papers on lung cancer looked at -- well, were saying more cancers, what is the true incidence of this? Is it real or perceived? How do you diagnose cancer? What are the various cell types? How does cancer behave? Where does it go? How does it metastasize? How does one diagnosis it? How does one treat it? These were the issues in lung cancer that were actively studied in the 1930's; not cause.

Q. You talk in the next paragraph, you begin, "A period of time in the early 1950's..." So let me ask you: The status of scientific knowledge that we've been talking about in the 1930's, is there any change in the 1940's, any significant change?

A. No. So the description that I have provided for the 30's, in general, also applies to

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the 40's.

Q. All right. This is the third paragraph of your disclosure.

A. Okay.

Q. And the last sentence says: "Specifically, he is expected to testify that prior to the early 1950's there was no reliable scientific or medical evidence that cigarette smoking --

A. If I may interject. Just looking at this --

Q. Sure.

A. -- more carefully, as we are now, I would change that as earlier, "to 1950." 1950 is the turning point.

Q. So you want to change, instead of saying "the early 1950's --"

A. I would just say "prior to 1950."

Q. "To 1950." Okay.

When you say there was no reliable scientific or medical evidence that cigarette smoking posed a serious threat to the public health, was there some evidence? Are you distinguishing between reliable evidence and nonreliable evidence?

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A. There was no credible evidence. The most that could be said was that there were a handful of studies where investigators had assembled cases of patients who had lung cancer and they saw that, you know, maybe 70% of their patients had lung cancer and they would hypothesize, hum -- excuse me, maybe 70% of the patients had -- were smokers, so they would hypothesize that perhaps cigarette smoking contributed to lung cancer. The problem was that there were no controls. So you have the suggestion in the literature from these uncontrolled case studies; but without controls it was impossible to draw any conclusions.

Q. What were the studies you were just referring to?

A. Oh, there were a handful. I'd have to actually get out, you know, the papers and see them. There were -- I don't want to speculate on the names of the writers. I've looked at maybe 1400 studies altogether, but there were very few of these, but there were a handful of investigators who assembled their own patients who had lung cancer and, you know, some of them smoked and they said that, you know, maybe smoking is the cause, but there was no comparison, no control

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with individuals who are not smokers, so that made it impossible to draw any conclusion from those suggestions. The investigators at the time properly viewed this as a hypothesis, but not as data.

Q. Did you also see at that time criticisms of those studies?

A. Oh, yes.

Q. And on the basis -- was the criticism on the basis of what you were just describing, there being no --

A. The criticism was on two principal bases.

Q. What were those bases?

A. Number one, lack of any experimental evidence linking cigarette smoking with lung cancer, and B) the uncontrolled natures of these clinical reports. Yes, Dr. Smith had -- 70% of Dr. Smith's patients had lung -- excuse me, 70% of Dr. Smith's patients with lung cancer smoke, but 70% of the population were smoking, so that's not really evidence. So those two criticisms were made at the time.

Q. Would you describe this as a -- let me rephrase this. Was there a great deal of discussion in the literature at this time, back

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and forth between these studies and the criticism of them? Is this something that you came across many times in your search of the literature?

A. Well, actually, I'm glad you asked that question, because it's another example of putting things in context, of being comprehensive. In fact, there's very little discussion of cause, because the cause of cancer -- of lung cancer in particular. Cancer in general at the time was considered unknowable. If you were to take the corpus of papers on lung cancer at that time, the proportion of time spent on cause was very, very little. Most of the energy, most of the words, most of the publications, most of the discussion, as I already said, was on other aspects of lung cancer. The discussion, the buzz, was on diagnosis, on treatment, natural history of disease, those sorts of issues. The overriding point was how little discussion there was.

Q. Thank you. You've used the phrase "a serious threat to the public health" in this paragraph we're talking about, but we've been talking somewhat specifically about lung cancer in your answers. Was there any scientific or medical evidence prior to 1950 that cigarette smoking

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played -- posed any other serious threat to health?

A. It was recognized that cigarette smoking was not good if you have vascular disease, if you have Berger's Disease, vascular insufficiency to the extremities, as one example. So it was not suggested that cigarette smoking was benign. But in terms of this very important issue of lung cancer, there was no evidence linking cigarette smoking with lung cancer at that time, and the consensus in the scientific community was that cigarette smoking is not the cause and is not related to lung cancer, if we're looking at the 1930's and 1940's.

Q. Can you give me a time period when there was reliable evidence regarding the effect of cigarette smoking on vascular diseases?

A. I didn't investigate that in detail, so I know that the concern with peripheral vascular disease goes back a while. Quite frankly, I'm not certain how far it goes back or when it begun -- when it began. I do wish to distinguish between peripheral vascular disease and coronary artery disease. That linkage which was later established had not been established before 1950. So when I

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talk about vascular disease, I'm talking about peripheral arteries and veins and not coronary. But I don't know precisely when that linkage was first made.

Q. So is it your testimony that prior to 1950 there was also no reliable scientific or medical evidence that cigarette smoking caused coronary vascular disease?

A. I believe that's a fair statement.

Q. Would a smoker, not a scientist, would a smoker have had any basis for believing that cigarettes posed a risk of lung cancer or coronary vascular disease in 1950?

MR. DODDS: I'll object to the form and the lack of foundation. It's outside the scope.

A. Well, please remember, as I'm sure you do, that the issue of public awareness of science is a different entity from the scientific knowledge and scientific understanding, and there is lots of common wisdom, lots of folklore about health and medicine. That's not my area. So I'm not really in the position to discuss what popular perceptions might have been.

I'm speaking from the perspective

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of the scientific knowledge and what was established in the scientific literature, in the biomedical community. If a smoker were to look at that literature, you would find no evidence linking cigarette smoking with coronary arteries disease or lung cancer. So I'm speaking the scientific literature. I'm not talking about popular perceptions.

Q. So regardless of what a smoker might have believed, a smoker could have pointed to no reliable scientific evidence that cigarette smoking caused lung cancer prior to 1950?

A. I'm not even sure if I would agree with that wording, simply because I'm not in the popular area and I don't know how many smokers -- how many nonscientific nonmedical smokers studied the scientific literature and understood it. So I would feel more comfortable with the wording that there was no scientific or medical evidence linking cigarette smoking with lung cancer or coronary artery disease prior to 1950. This is a literature that is clearly accessible to the medical and scientific community and I really don't feel it would be appropriate for me to speculate what the nonsmoker might have been able

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to -- excuse me, the nonscientist might have been able to know about it.

Q. Would the nonscientist have had access to scientific literature that a scientist would not have?

A. No. No.

Q. You may have just answered this question, but let me ask it directly. Has any of your research been directed to what the average consumer of cigarettes would have known about the dangers of smoking?

A. I think you're correct, that was really -- pardon my last answer. No, I haven't. My investigation twelve years ago, and my testimony today, has to do with the state of scientific knowledge and medical knowledge, not with consumer awareness or popular perceptions.

Q. Let me just go to the next paragraph of your disclosure. In the second sentence of that disclosure, says: "He is further expected to testify that these articles --" and you're talking about the scientific articles?

A. I'm sorry, which paragraph are you in?

Q. I'm in the fourth full paragraph.

A. Uh-hum.

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Q. The first sentence is describing medical and scientific articles that began to appear in the 1950's; correct?

A. Correct.

Q. And the second sentence says: "He is further expected to testify that these articles primarily concern statistical studies which were not considered sufficient under then prevailing medical and scientific standards to prove that cigarette smoking caused lung cancer or any other disease."

First, doctor, are statistical studies considered sufficient under currently prevailing medical and scientific standards to prove that cigarette smoking causes lung cancer?

A. This was the great contribution of the Surgeon General's report of 1964 which showed that under certain circumstances epidemiological and statistical evidence could be used to draw conclusions about causality in chronic diseases. I want to emphasize that it wasn't epidemiological evidence alone; it was in conjunction with coherence, which is biological plausibility. So it wasn't statistics alone. But if you had the right circumstance and biologic coherence, if

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certain specific conditions were met which were outlined by the first Surgeon General's report, one can draw conclusions, and, of course -- about the causality in chronic diseases from the epidemiological evidence. We have developed, inherited and developed that tradition today. So, yes, we're using that widely today. But it was done sometime in the history of medicine for the first time, and that was the Surgeon General's report of 1950 -- of '64 that brought this work to completion.

Q. Okay.

A. And by the way, if I may interject with one other point.

Q. Certainly.

A. This is a wonderful example of avoiding hindsight. We today are the beneficiaries of the Surgeon General's report. We have used epidemiological techniques successfully with a variety of important chronic conditions, hypertension, cholesterol, and many other things. We're accustomed to using this today. The 1950's, that had never been done before, and the criteria to do it properly hadn't even been invented or developed. It would be classic conceit for

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someone in 2000 to look at the 1950's and say, hey, the evidence was there, why didn't they just listen to the epidemiological studies? That is a classic example of hindsight, assuming the past had the same knowledge and understanding that we do today. The techniques were being developed and development had not yet matured and had not yet gained general acceptance.

Q. So we're talking about a time period when statistical studies, according to your statement, were not considered sufficient under then prevailing medical and scientific standards to prove that cigarette smoking caused lung cancer?

A. Correct.

Q. Were there some scientists in the 1950's who had concluded that cigarette smoking caused lung cancer?

A. Which -- the 1950's was a rapidly moving decade.

Q. Then let's take it apart.

A. Yes.

Q. Let's say the early 1950's, '50 to '52.

A. '50 to '52, in general, this was the era,

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as you know, of the retrospective studies. Those were shocking in terms of providing for the first time -- and I want to emphasize "the first time" -- good evidence showing a statistical relationship between cigarette smoke and lung cancer. The question was, what did it mean? And I hesitate to speak in absolute terms. I'm sure you could find a 90-year old scientist today who said, well, I believed it in 1950. It might be memory shaking. In general, the scientific community did not accept cause and effect relationship. They were worried about that. They felt this is a subject needing further investigation. I won't say that absolutely no scientist believed it, but I will certainly say that very, very few believed it, if you're looking 1950 to 1952.

Q. And let's try and avoid hindsight, as you've cautioned.

A. I can assure you one thing. I will not let hindsight, I will not permit it, to enter into our conversation today.

Q. Okay. Can you point to me a scientific article -- can you point to me where in the scientific literature you first encountered a

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scientist stating his conclusion that there is a causal link between smoking and lung cancer.

A. I think the -- now, remember, things go in waves, and to answer your question fully I have to resort to one of the principles of historical analysis, namely, an understanding of how science evolves. And if you have a paradigm shift, a revolution, one viewpoint or world view replacing another, which is what happened, there is always going to be someone at the beginning who's the first. It doesn't mean there's a consensus. There's -- then you'll have most people here in the broad middle to accept the new view. Then ultimately there are going to be people at the end who -- and there's nothing morally wrong with them; they just have different standards or needed more persuasion. So it occurs in this evolutionary fashion before you can say a consensus has been reached.

It's also important to remember that consensuses are often wrong in science. This is another aspect of science that the historian in medicine and science learns from years of serious inquiry and study of the subject: That lots of times that the consensus is wrong and ideas that

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to us today appear silly were in vogue. Sometimes we find important discoveries and important ideas in which there was resistance to those ideas. It took 20 years for doctors to accept germ-free antiseptic surgery. It took 30 years to accept general anesthesia, ether anesthesia.

So things don't just turn around overnight. So that is just as true in the circumstances regarding the interpretation of epidemiological evidence as it is throughout the history of medicine and the history of science.

I would say the beginning of the wave thought occurred with the first prospective epidemiological studies, which, as you know, appeared in 1954.

Q. And whose studies were those?

A. There were two important studies. There is the Doll and Hill study. These were English scientists who studied British doctors, and then there was a second important study, the Hammond and Horn study sponsored by the American Cancer Society here in the United States, and that had even more patients, as I recall, that had ultimately in the range of a couple of hundred thousand. The Doll and Hill study had had tens of

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thousand of patients; the Hammond and Horn studies, the American Cancer Society study ultimately had hundreds of thousands of patients. So it was even larger in terms of numbers. And these studies were continued over time, but the first reports appeared in 1954.

Q. Who was criticizing those studies in the medical literature at the period of '54 or '55?

A. Well, there was widespread discussion of what those studies meant. Certainly because they were prospective studies and had all the design advantages that prospective studies can bring to bear on the subject that retrospective studies cannot, they were powerful. They stimulated a lot of discussion and a lot of debate. But they were epidemiological and statistical. They were not experimental. They were not laboratory based. They weren't experimental in design. And this had been the 500-year gold standard of medical research. So, many -- so, many scientists who came from experimental tradition, whether they be pathologists or pharmacologists or cardiac surgeons or others who were looking for experimental evidence, were unpersuaded. And

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there were also some epidemiologists who did not yet believe that. There were some statisticians who didn't believe those studies. So there was quite a bit of disagreement at that time.

Q. Can you name someone -- can you recall someone who stated in the literature they found these studies unpersuasive?

A. There were statisticians, and there was Berkson from the Mayo Clinic. There was R. A. Fisher from England who was the single greatest scientific figure. There was the -- all the scientists at the National Cancer Institute, the director of the National Cancer Institute, the director, Dr. Horsefald, the director of the Memorial Sloan-Kettering institute. There were -- you know, these would be some examples. There was Dr. Green, who was chairman of pathology. There were a lot of cardiac surgeon -- excuse me, chest surgeons. These would be some examples.

Q. Let's take, for example, the National Cancer Institute that you had mentioned. What was their basis of criticism of the studies in finding them insufficient?

A. Well, there were -- now, the National Cancer Institute is a large organization, lots of

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scientists, and there were two grounds of doubt from the National Cancer Institute. One was represented by Hubner. You're asking for names. Dr. Hubner was himself an epidemiologist working at National Cancer Institute who did not believe that cigarette smoking was the major cause of lung cancer. He thought that environmental factors were much more important than cigarette smoking, looking at epidemiological data.

More to the point for the National Cancer Institute was the fact that the scientists at the National Cancer Institute were adherents of the 500-year old gold standard of needing experimental verification. They felt that statistical evidence was, though worrisome, was simply insufficient to allow conclusions about causality to be made, and without experimental evidence any hypothesis must be considered unproved. So, it was this question of what is the gold standard, what type of evidence do you need. They were not willing at that time to accept epidemiological data.

Q. You've described criticisms of the epidemiological data and -- as establishing causation; correct? Can you -- were there any

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studies using the same sort of epidemiological techniques that came to contrary results? Were there any studies at this time period which were refuting the results using the same methods?

A. Actually, there were not, which ultimately was one of the factors that helped lead to the Surgeon General's conclusion, because you were referring to the criterion of consistency. And the -- in general, both the retrospective studies and prospective studies were consistent. There was some differences. Relative risk in the early years ran all over the map, but later that evened out with time. But in the early years some people were suspicious that the relative risks calculated from the different studies were so different that maybe there is something wrong with these studies. That's a minor point. The larger point is that, in general, the studies were consistent. That's a point that the Surgeon General's report considered very important.

But the question was you're doing the same thing, you're getting the same result. And if you do it twenty times, you'll get the same result twenty times. To those who looked for experimental verification, it didn't matter if you

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did it 2,000 times. The question was, what conclusions can you draw from epidemiological and statistical data? And if you did not accept that paradigm, as many scientists did not, then it didn't matter how many times you did it. But, yes, consistency, there was consistency in results.

Q. Okay. You've said a bona -- you called it a bona fide scientific controversy continued at least up to the publication of the report of the Surgeon General's report in 1964.

A. Uh-hum.

Q. Have you formed any opinion regarding when or if that bona fide controversy ended?

A. Yes, I have.

Q. And when would that be?

A. As a spirited public debate within the scientific community, it ended in the aftermath of the first Surgeon General's report. As I mentioned, the Surgeon General's report made a new intellectual contribution as it formulated its five criteria, and of course it assembled and reviewed the world's literature in a way no one had done before, and it also had new evidence that

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no one had seen before and it was able to take into account. So it's a new contribution. And in the aftermath of that you see a conspicuous, you know, dying down of the controversy in the scientific community. That's not to say that everyone agreed to accept epidemiological evidence. You know, if you were a bona fide toxicologist or pharmacologist who -- independent thinker, as most scientists are -- who required experimental evidence to prove causation, that doesn't mean that everyone was persuaded by the report, and it doesn't mean that it was irresponsible to disagree with the report. But if you're looking for a general quieting down and acceptance among -- what a historian can call a consensus, it would be in the aftermath of the report.

Q. What criteria do you use to form your conclusions about when the controversy would have died down given that there were still who did not accept?

A. It's a judgment. All scholarship is judgments. Science is a judgment. Conclusions about causation are a judgment, as the Surgeon General points out. And, similarly, historians

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draw judgments. It's not about one whether there's controversy or not. But some things that will help us do so: When you see papers challenging the cigarette hypothesis, when those stop to -- when those stop occurring in any significant numbers; when you see attention moved too other subjects; when you see people who once posed the cigarette hypothesis changed their mind; when you see the clinical epidemiology accepted as a new discipline; when departments of clinical epidemiology are created, which is the mid and late 1960's; when journals of clinical epidemiology begin in the mid and late 1960's; when professional organizations of clinical epidemiology and training programs begin; when you see the text books talk -- draw conclusions about causation; these are all various types of evidence that we as historians can use to draw conclusions.

Q. Can you cite to an example of some scientist who had publicly announced their opposition to the causation theory who then changed their mind?

A. Well, it's -- you know, people don't write articles about this, but certainly Surgeon General Bernie in the late '50's discusses the growing

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sentiment. Now, he's speaking at a population level.

You know, you have to put some reality in it. You know, people don't write articles saying, well, you know, I -- you know, last year I wrote an editorial against it, but I've accepted it today. They just stop -- they just stop the denial. They just start teaching it. They start accepting it. It would be unrealistic to expect there to be article after article saying, well, I've changed my mind. You just accept it and move on to something else and start teaching it. And it's done in that type of an informative fashion so. It's more the disappearance of resistance and seeing the ideas disseminate into the review articles, into the text books, into the medical teachings, as opposed to articles saying, well, I changed my mind.

Q. You had listed that as one example of the things --

A. Right.

Q. -- you would look at --

A. Right.

Q. -- in the consensus and development, as people who had opposed it and

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changed their mind?
A. Right.
Q. Okay.
A. What you do see in the 50's and even in the early 60's is a significant discussion in the scientific literature with lots of articles, even in the 60's, indicating the author's unwillingness to accept epidemiological evidence, holding out for experimental evidence, even in the 1960's, saying that epidemiological evidence is insufficient. What you find is that for the most part that type of thing stops.
Q. The last thing I want to talk about in your expert statement, it says "Dr. Ludmerer is also expected to testify how this controversy was addressed by public health officials."
What are you going to talk about in terms of how public health officials address the controversy?
A. Well, I don't know precisely what I'm going to say because I have no idea what the direct examination will be.
Q. I understand that. How was the smoking and health controversy addressed by public health officials in, say, the early 1960's?

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A. Well, again, you see this evolution. The first time the term "primary prevention of lung cancer," that is prevent lung cancer by not smoking, as opposed to prevention, see your doctor early if you're coughing up blood, the first time that was used in the public health community ever was 1954. And you see an evolution as of view over the time. I think another notable date would be 1957. Surgeon General Bernie issued a statement that said that excessive cigarette smoking -- and I want to underline "excessive" -- excessive cigarette smoking is one of the factors leading to lung cancer. In the United States that was replaced by a more strongly worded statement by Surgeon General Bernie in 1959. And then this continues to evolve in this country. The culmination of this movement is the first Surgeon General's report of January '64, which you know of course draws the causal linkage between cigarette smoking and lung cancer in men at that time.

Q. You mentioned 1954 as the first date when you saw the statement that one should stop smoking to avoid lung cancer. Who made that statement?

A. I suspect it was made by a number of

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people. But two places in particular -- well, the place in particular I was thinking, I believe, was the American Public Health Association for the first time used that term, and I was specifically referring to that organization.

MR. EVANS: Can we take a five-minute break.

THE VIDEOGRAPHER: Off the videotape.

(Discussion held off the record.)

(Time noted: 11:38 a.m.)

(Brief recess.)

(Time noted: 11:52 a.m.)

THE VIDEOGRAPHER: We're back on the videotape 11:52.

Q. Dr. Ludmerer are you familiar with the Tobacco Industry Research Committee, sometimes known by its initials TIRC?

A. I've heard the name. I really do not know much about it.

Q. In your study of, scientific studies about smoking and disease, did you come across studies that were response stored by or connected in any way to the TIRC?

A. Occasionally.

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Q. What can you recall -- or can you recall specific studies that are linked in any way to the TIRC?
A. Not at this time.
Q. No?
A. I'd have to look at the papers again in terms of which study was funded by TIRC or which were by National Cancer Institute, which by U.S. Public Health Service and so forth.
Q. So there's nothing about the link with TIRC that makes any particular study stand out in your mind; is that correct?
A. That's correct.
Q. We were talking about the bona fide scientific controversy on the link between cigarette smoking and lung cancer. Did your research include how that controversy was addressed by cigarette manufacturers?
A. No.
Q. Did you in your research consider any internal documents produced or generated from cigarette manufacturers?
A. No.
Q. If there were documents from cigarette manufacturers regarding the state of

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scientific knowledge on smoking and health, do you consider that they would have been helpful sources to you?

A. No.

MR. DODDS: Objection.

A. Could you repeat that question.

Q. If there were documents from cigarette manufacturers regarding the state of scientific knowledge regarding smoking and health, would you have considered those important to your research?

A. Are you talking about published papers from cigarette companies? Are you talking about internal company records? Are you --

Q. Well, let me clarify. Have you, in your research, looked at any published papers by cigarette manufacturers?

A. I examined the world's scientific literature. Sometimes papers indicated that they were either funded by TIRC or that they were scientists at a tobacco company. But I have not systematically studied the scientific research from the standpoint of the company and everything that one company did or another. No, I have not studied that.

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Q. Okay. Now, well, let me then narrow my question to documents. Nonpublic -- in what I call internal documents of cigarette manufacturers, if they're on the topic of smoking and health, would you have considered those documents to be helpful to your research?

MR. DODDS: Objection to form.

A. First it's a hypothetical because I don't know what documents there were, but -- or what quality they were, so there are a lot of hypotheticals in the question. But also the -- my assignment was the world scientific literature, which by definition is published literature. It doesn't include unpublished work anywhere. So, from that perspective, I was able to have total access to what I needed to look at.

Q. In the context of your research, have you used both primary and secondary sources? You've used the terms primary and secondary sources in talking about historical research. In the context of this research, how would you define primary sources and secondary sources?

A. Primary sources would be publications by people at the time. The publication on lung cancer from 1936 in the New England Journal of

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Medicine or 1958 in the Journal of the American Medical Association or the Surgeon General's report. Secondary sources would be examinations of the topic and of the primary data and of related subjects by other historians or other writers.

Q. In other historical context, you've described primary sources as things such as researchers on notes, notebooks, and correspondence, and published literature as being a secondary source. Now, is your research on this topic somewhat different in that regard?

MR. DODDS: Objection to form.

A. The primary sources can be unpublished, but they can be published, and this is consistent. If I were writing a biography of Abraham Lincoln, primary sources would include his published writings and published speeches. A secondary source would be another biography by someone in 1985 about Lincoln that I might read for background or maybe a history of the Civil War by someone else or maybe a history of the economy at that time, something of that sort. But I think -- a publication in some -- depending on the circumstances, is, in some cases, is a

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secondary source and in some cases it can be a primary source. It's topic dependent.

Q. Have you considered anything in what I would call the popular press, newspapers and that sort of thing, other than scientific journals? Did you consider any newspaper articles in your research?

A. As I may have said before, I have not. I studied the scientific literature, but not how this science was represented to the public.

Q. Doctor, are you familiar with the frank statement? Does that phrase mean anything to you?

A. Yes, it does.

Q. What is your understanding of the frank statement?

A. Could you clarify that question.

Q. Well, you -- I asked you if you were familiar with that phrase and you did say yes, so I want to know, just based on your familiarity, what you believe the frank statement to be.

A. Well, the frank statement, as I recall, was a statement that appeared widely in the popular media in early 1954 in response the skin painting

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experiments of Dr. Winder and Dr. Graham and putting that in context for the public. I believe it was published in early 1954.

Q. We are talking about the same frank statement.

MR. EVANS: I'd like the court reporter to mark this. They're stapled to go for some reason.

(Plaintiff's Exhibit 3, article entitled, "A frank statement to cigarette smokers," marked for identification, this date.)

(Discussion held off the record.)

Q. Doctor, I've had the court reporter mark what I apologize is a rather hard to read copy of "a frank statement to cigarette smokers," which, as you accurately described, was a statement appearing in early 1954. And based on your research of the scientific literature, I just want to ask you a couple of questions on what was stated in this frank statement.

If you want to take just a moment to read through it, that will be fine.

A. Okay.

Q. Okay. Doctor, keeping in mind we're talking about the time period of 1954, about

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halfway down the first column of this frank statement, it states: "Distinguished authorities point out..." and then it says: "No. 1. That medical research of recent years indicates many possible causes of lung cancer." Now, based on your research; is that true? Is that a true statement?

A. Yes, it is.

Q. What were the many -- what were some of the many possible causes of lung cancer that were in -- that medical research had pointed out at this time period, 1954?

A. I'm sorry, I couldn't hear you. What were the?

Q. At this time period in 1954, what were some of the many possible causes of lung cancer that were appearing in medical research?

A. As alternative suggestions as to the cause, you mean? Besides tobacco?

Q. Yes.

A. Examples would include radiation, air pollution, tarring of the roads, atmospheric pollution, genetic factors, occupational exposures.

Q. Now, had -- were there -- was there

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medical literature of the period 1954 or earlier which would establish any of those things as a cause of lung cancer?

A. Nothing was --

MR. DODDS: Objection to form.

A. Nothing, including cigarette smoking, was established as a cause of lung cancer at that time. The list that you asked for were the factors that were receiving the most attention in terms of further investigation and studies as possible causes.

Q. We talked about earlier in the context of your expert disclosure -- pardon me just a second -- that prior to the early 1950's, there was no reliable scientific or medical evidence that cigarette smoking posed a serious threat to public health.

A. Uh-hum.

Q. Was there reliable scientific or medical evidence at that time period that any other exposure was a cause of lung cancer?

A. Prior to 1950?

Q. Yes.

A. No, there was not. As I stated before, the cause of lung cancer before 1950 was considered

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unknown.

Q. And regarding possible causes other than cigarette smoking, was there any change in the period from 1950 to 1954?

A. No.

Q. Okay. Going back to the frank statement, under that No. 2, it says: "Again, distinguished authorities point out that there is no agreement among the authorities regarding what the cause is." And we're talking about lung cancer. Is that a true statement, based on your research?

A. Yes, it is.

Q. And if you look down toward the bottom of that first column, the statement, which is identified as being from the Tobacco Industry Research Committee, it says: "We believe the products we make are not injurious to health." Now, again, based on your review of the scientific literature of this time period, would you describe that as being an agreement with the consensus of the time?

MR. DODDS: Objection. No foundation.

A. The consensus at the time was that there

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was no agreement. Sometimes a consensus is that we don't know or that there are multiple competing -- if you're describing the state of knowledge, sometimes the characteristic is disagreement rather than agreement, competing views. I think it would be more accurate to say that that statement was consistent with the views of many respectable members of the scientific community at that time.

Q. Can you give me examples from the literature of respected members of the scientific community who are opining at this time that cigarettes were not injurious to health?

A. Well, there were papers, as I indicated, at that time, that editorials in major journals that would discuss the cigarette controversy and conclude that in their view the evidence was not sufficient to warrant a conclusion that cigarette smoking caused lung cancer. So there were editorials, there were essays, there were, you know, things of that sort.

Q. I understand that. And we talked at length about that link between cigarette smoking and lung cancer. Can you point to anything in the scientific literature at this time

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that was making -- that was stating the conclusion that cigarettes are not injurious to health?

A. There were statements throughout the medical literature, including editorials in New England Journal of Medicine, editorials in the Journal of Medical Education, in the 50's, but they phrased it differently. They weren't saying that cigarette smoking is safe. They were saying that there is no evidence at this time to believe that it causes lung cancer. They were saying something different from -- related but different.

Q. Different than cigarettes are not injurious to health?

A. Right. They were saying that there's no evidence that it causes lung cancer and there's no evidence at this point to fear it.

Q. All right.

MR. EVANS: I'd like you to mark that as the next exhibit, please.

(Plaintiff's Exhibit 4, article from British Medical Journal, London, Saturday December 13, 1952, marked for identification, this date.)

Q. Now, doctor, I've asked the court reporter to mark as the next exhibit a copy of an

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article from the British Medical Journal, dated December of 1952.

A. Okay.

Q. And I believe this is an article that you have in prior testimony indicated that you are familiar with?

A. Correct.

Q. And do you in fact recognize this article?

A. Uh-hum.

Q. Okay. I'd like you to look on the second page and the second column, the right-hand column. In this article is discussing statistical studies, such as the Doll & Hill studies that you've mentioned earlier today.

A. Uh-hum. Are you referring to the paragraph, "Where do we go from here?"

Q. Yes. And this paragraph is discussing the statistics and --

A. Uh-hum.

Q. -- about two or three sentences down in that paragraph it says, "All that these things can do is to show that the probability of a causative connection between an agent and a disease is so great that we are bound to take what

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preventive action we can, accepting the theory as though the proof were absolute until further research leads to some modification."

Now, based upon your research, would you describe that statement as reflecting a consensus of the time, 1952?

A. I think it has always been recognized that any conclusion about causality in science is an act of judgment. This is a point that the Surgeon General reiterated as part of the 1964 report.

The question in the early 50's was what is the meaning of the statistical information that has been assembled, what conclusions can we draw from it? As I indicated, some people at that time began to accept a causal relationship, but many were unwilling to take the same step. So, this is an example of -- so -- of an editorial that -- one of the early ones to take the position that statistical evidence can be used to draw from causation, but it is far from representative of the literature. It is one type of article, but there are many other types as well.

Q. Okay. A couple of more sentences down, we're at about the middle of this column, it says, "Intensive research on the chemical

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constituents of tobacco and of tobacco smoke is now needed and it is surely incumbent upon the tobacco manufacturers to do this."

Let me ask you if based on this research have you seen other examples in the literature of references to what tobacco manufacturers should or should not do.

MR. DODDS: Objection to form.

A. That is at most a minor theme. So I would say that there is not a lot of discussion of that point as opposed to, you know, study -- there was lots of discussion about the importance of studying cigarette smoking, but there was not much discussion of the responsibilities of different organizations and different companies, and I'm not really an expert on the company behavior or responsibility and -- at the time that this is also being studied very widely by the scientific community.

Q. Okay. Do you have any opinion on whether it was incumbent upon tobacco manufacturers at that time to study the chemical constituents of tobacco and tobacco smoke?

MR. DODDS: Objection. Outside the scope.

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A. I don't have any expertise to address the issue of company responsibility, you know, what a company should do, what an appropriate research program for them is, versus funding research by others, which of course they did. That's really outside my scope.

Q. And at trial of this case, is it true that you don't plan to offer any opinion on what tobacco manufacturers should or should not have done regarding research into cigarette smoking?

A. That's correct.

MR. EVANS: One more article I want to show you.

(Plaintiff's Exhibit 5, editorial from the New England Journal of Medicine, marked for identification, this date.)

MR. EVANS: And, doctor, I'm having the court reporter mark a copy of an editorial from the New England Journal of Medicine, and this may in fact be the editorial that you referenced in an earlier answer, but can you confirm for me that this is a document that you have seen and are familiar with?

A. It looks very familiar, but there is no

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date on my copy.

Q. You're correct. That's my understanding this is a date -- an editorial from 1953?

A. Uh-hum.

Q. But please take a moment to look at this and confirm if this is an article that you have seen.

A. I've seen this.

Q. Okay. Thank you. If you would look at page 2, doctor, the first full paragraph that begins, "If such figures...." And, again, this article -- this editorial is discussing the same statistical Doll & Hill studies that we discussed earlier?

A. Uh-hum. Correct.

Q. The second sentence of this paragraph I've just pointed out to you, says, "If similar data had incriminated a food contaminant that was not habit forming and was not supported by the advertising of a financial empire, there is little doubt that effective countermeasures would have followed quickly."

Now, I want to ask you as a medical historian, who has studied this time period

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extensively, if you agree with the conclusion that they're stating in this editorial, that if similar statistical data had incriminated a food contaminant, effective countermeasures would have followed quickly.

MR. DODDS: Objection.

A. I'm not an expert -- even though I'm an historian, I'm not an expert on the history of food and drug regulation, so I really don't know what their requirements at that time would have been, so I'm unable to say if that statement is true or not, that a food additive would have been prohibited. But, as I said, before the break, in the early 50's people began to accept the causation hypothesis, and this is part of the early wave.

Q. So you're not going to offer any opinion in this case on research into things other than tobacco and its impact on the public health; is that correct?

A. Correct.

Q. Did the bona fide controversy on the link between smoking and lung cancer begin to abate or die down at some period prior to the 1964 Surgeon General's report or did it continue at a

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high level until that report?

MR. DODDS: Objection to form. You can answer.

A. Well, as indicated, as a new idea is developed, succeeds an old idea, things do not happen instantaneously.

Q. Correct.

A. It's a process. What you find beginning in the early 50's -- and I think you chose probably the two best examples at the very beginning -- is people accepting the hypothesis, but others refusing to do so. And it's difficult to assess -- I think it would be more accurate to say that a very strong controversy continued through the report. You have to look both at numbers -- are you talking 50/50, 60/40, 70/30, things of that sort? You also have to look at the scientific stature of the people. So if we're playing basketball and Michael Jordon is on my team, I'll let you have four or five guys, maybe even six or seven. So I think it's accurate to say that there was a controversy that continued through the Surgeon General's report.

Q. Thank you, doctor. Let me ask you a few questions about the state of West Virginia.

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Have you ever lived in West Virginia?
A. No.
Q. Ever traveled there with any regularity?
A. No.
Q. Do you have any knowledge at all of the class representatives in this case? And I'll tell you their names, Christa Blankenship and Mae Sivo.
A. What do you mean by any knowledge of them?
Q. Do you have any knowledge whatsoever about those two individuals, other than that they are named plaintiffs in this case?
A. No, I don't.
Q. Do you have any experience at all with the healthcare system in West Virginia?
A. No, I don't.
Q. And do you plan to give any testimony at all regarding in any way the delivery of healthcare services in West Virginia?
A. No.
Q. Are you familiar with the medical monitoring proposals offered by the plaintiffs' experts in this case?
A. No.

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MR. EVANS: Could we go off record for a second.

THE VIDEOGRAPHER: We're going off the videotape at 12:24.

(Discussion held off the record.)

THE VIDEOGRAPHER: Back on the videotape. We're back on the videotape, 12:26.

MR. EVANS: Doctor, I thank you for your time. I don't have any further questions for you, but the attorney representing the Louisiana case may have some questions.

THE VIDEOGRAPHER: Off the videotape.

(Time noted: 12:27 pm.)

(Recess.)

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AFTERNOON SESSION

1:32 p.m.

THE VIDEOGRAPHER: We're back on the record videotape. We're starting tape 2 of today's deposition. The time is 1332.

KENNETH M. LUDMERER,

having been previously duly sworn, testified further as follows:

CROSS EXAMINATION

BY MR. MAISTROS:

Q. Doctor, my name is Jack Maistros. I represent the plaintiffs Scott in Jackson, in the Louisiana action. Are you basically familiar with that action or unfamiliar?

A. Only an outline.

Q. Have you seen the complaint?

A. No, I have not.

Q. In the petition, I think they call it in Louisiana. Have you read any of the pleadings in that case?

A. No, I have not.

Q. Have you read any depositions from that case?

A. No, I have not.

(Plaintiff Ludmerer Exhibit 6,

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Notice of Deposition, marked for identification, this date.)

Q. In front of you is a Notice of Deposition for this deposition. It's Exhibit 6 I've marked. That should be in front of you. Have you seen that notice before?

A. No, I have not.

Q. Were you given the attachment Exhibit A that's attached to that notice that lists various documents that you were requested to bring for your deposition today?

A. I have not seen Exhibit A.

Q. I'm particularly interested in have you brought with you any billing records for your work in the Scott case or any other tobacco case?

A. I have brought no records with me.

MR. MAISTROS: Do you intend on producing those billing records or --

MR. DODDS: As I understood it, maybe I'd like my co-counsel working on the Scott case to address it, but documents have been provided with regard to Dr. Ludmerer March.

MR. CONGROVE: As we talked last week at the last deposition, Jack, we produced Bryant's documents. I noted when you asked last

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week, you did ask last week for billing records as well. So that's noted in --

MR. MAISTROS: Just keeps getting noted and sometime I'll file a motion and we'll have a hearing on it.

MR. CONGROVE: I don't think you'll have to file a motion on that.

Q. You do have billing records for the Scott case, particularly the Scott case?

A. No, I don't.

Q. Have you billed any time for the Scott case?

A. No, I haven't.

Q. Your preparation that you testified about earlier, was it just for the West Virginia case yesterday?

A. The preparation yesterday?

Q. Yes.

A. Is what you're asking about? It's my understanding that was to be for both depositions since they were both going to be at the same time.

Q. How many hours have you devoted thus far to the Scott case?

A. Oh, approximately the same number of hours that I've devoted to the Blankenship case.

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Q. And what would that be?
A. I haven't even counted them up or tallied them. You know, a few dozen.
Q. Approximately five dozen?
A. Probably.
Q. Do you distinguish from --
A. I'm speaking from memory and haven't even submitted a bill yet.
Q. When you're reviewing medical journals, articles, whatever the case may be, the twelve to fourteen hundred that you've reviewed, do you distinguish if you're reading those for the Scott case versus the Blankenship case versus the Anderson case?
A. There's actually no distinction because, as you know, the testimony that I have been asked to give in the handful of cases I've been involved with all is the same testimony dating to the original work from 1988 and '89. So it's the same preparation for me essentially for one case versus another and it doesn't -- and if I read an article, it's not with Scott in mind or Blankenship in mind or Anderson in mind. It's just part of my preparation that I do, would do for any case if asked to testify on this subject.

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Q. What work product have you created to -- from the five dozen or so hours that you've spent on the Scott case?
A. I don't know what you mean by work product.
Q. Have you drafted any reports in Scott case?
A. No, I have not.
Q. Have you taken any notes in the Scott case?
A. Not beyond original notes from -- upon which I base my opinions, and you already have those.
Q. And other than yesterday, have you met with any attorneys in preparation for your deposition in the Scott case?
A. No, I have not.
Q. So tell me what you've done for the 60-odd hours in the Scott case.
A. Well, it's the same as I've done for the Blankenship case. I've reviewed my own testimony. I've reviewed previous depositions, I've reviewed previous trial testimony, I reread many of the key articles and key documents which you have, and it's, in essence, reviewing my own work so I can give the most accurate answers to

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questions asked. It's not doing new work.

Q. And you did that for Blankenship as well?

A. Correct.

Q. But you've testified I think approximately -- although you don't have records for it, that you spent approximately 60 hours on Blankenship. Is it an additional 60 hours on Scott?

A. No. I was lumping the two together.

Q. So you've spent 60 on Scott and Blankenship?

A. Right.

Q. When did you come in to prepare for your deposition today? Is that yesterday?

A. When did I come in?

Q. To New York.

A. What day is today, Wednesday?

Q. Today is Wednesday the 18th.

A. I came in Monday night.

Q. When did you start billing for the Scott or Blankenship cases?

A. I haven't done any billing yet for either.

Q. For this week, when did your time start? When did you start keeping track of hours?

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A. Yesterday morning.
Q. So Tuesday morning?
A. Right.
Q. Where are you staying?
A. Where am I staying?
Q. What hotel?
A. I'm staying at the Waldorf.
Q. And who's paying for the Waldorf hotel?
A. I presume the law firm Dechert Price.
Q. Do you have a regular room, a suite?
A. A regular room.
Q. What's the nightly rate?
A. I don't know.
Q. Who pays for your dinners when you're in New York?
A. My expenses are paid for by the firm.
Q. Do you get 1099s from the firms?
A. Yes, I do.
Q. What was your 1099 approximately for last year, 1999?
A. I don't remember.
Q. Do you have any idea how much you were paid by the tobacco companies or the law

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firms to testify in 1099?
A. I only testified one time in 1999.
Q. Pardon me?
A. I only testified one time in 1999.
Q. So it should be pretty easy to tell me how much you were paid in 1999?
A. I testified in the Portland case, the Williams case, and my bill for that was, oh, I don't remember exactly, but it was probably around 70 hours worth of work.
Q. So you think in addition to expenses you got a 1099 reflecting approximately $21,000?
A. That's what I recall, as we sit here right now.
Q. How about for 1998?
A. I don't remember.
Q. Is it more than $21,000?
A. It probably was, but I don't remember exactly.
Q. More than 100,000?
A. No. Not that -- not as I remember.
Q. Do you have copies of your 1099's for 1998 and 1999?
A. With me?

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Q. No.
A. No.
Q. Somewhere.
A. Somewhere. My accountant probably does.
Q. Do you have any objection to providing those?
A. If my attorney asks me to. I would like to discuss it. But quite frankly I don't feel that's appropriate to my testimony here today, and it's a private matter, and quite frankly I would prefer not to.
Q. Who's your attorney?
A. Well, I presume the attorney in this case, Dechert, Price. Actually, it might be -- in your case, it would probably be Shooke, Hardy.
Q. Are the 1099's issued by the law firms or the tobacco companies?
A. I don't pay a lot of attention to these details, but my recollection is that they come from the law firms.
Q. Do you know which tobacco companies you're being paid money to testify in behalf of?
A. I'm being paid money for my time. I'm not being paid money for any, you know -- the testimony is mine, I'm being paid for my time.

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Q. Which companies are paying for your time?
A. Frankly, I don't know.
Q. Does it matter to you?
A. In terms of whether the defendant is Philip Morris or Lorillard? Not really. Not as far as I know.
Q. Other than your work with the tobacco companies, do you do outside consulting work with any other entities?
A. I'm asked to be a consultant at various healthcare things from time to time.
Q. What type of issues are -- are they cases?
A. Are you talking legal cases or consulting that is not related to a legal issue?
Q. You teach; correct?
A. Yes.
Q. And you get paid to teach?
A. Yes.
Q. And you consult, like you're doing today?
A. Right.
Q. Is this consulting?
A. Yes. But I'm asking you -- I don't

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understand your question.
Q. I'm getting to that.
A. I'm seeking a clarification.
Q. You teach?
A. Are you talking about legal consulting or are you talking about other organizations.
Q. We'll get to that. You teach and you get paid; right?
A. Correct.
Q. And you consult and you get paid?
A. Correct.
Q. And part of your consultation is in the tobacco area; correct?
A. That's correct. These cases here.
Q. What other type of cases do you receive monies for consulting?
A. I have been involved with no other legal cases.
Q. How about nonlegal cases?
A. Well, occasionally I get asked to speak or give a talk and usually there's an honorarium associated with that.
Q. Have you received any honorariums from tobacco related entities?
A. None.

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Q. Have any of the grants that you've listed on your CV been funded by tobacco related entities?
A. None.
Q. The money that you receive in your tobacco consultations, do you have to report that to the university?
A. We are not required to do so.
Q. Are there any guidelines established by the university in terms of your consulting work, any limitations placed on it?
A. The greatest concern with the university is on the subject of conflict of interests. Their great concern is with a -- oh, I'm speaking in the hypothetical, you know -- a clinical investigator is studying a new drug involved with the clinical trial who owns stock in the drug company or who has some financial ties with the drug company. So conflict of interest in the sense that I'm describing it now I would describe as the great concern of the university.
Q. Does the university have written guidelines on conflict of interest?
A. Yes, there are.
Q. Where could I find those if I was

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interested in looking at them?
A. If you're interested in looking at them, they're probably in the medical school business office somewhere. They send them out periodically. Most of us just kind of toss them when we see them. I don't know offhand which individual to direct you to, but if you were to call the dean of the Washington University Medical School they probably could help.
Q. Who is that?
A. Who's the dean?
Q. Yes.
A. The dean is -- well, we've got quite a few deans.
Q. Is there a dean for academic affairs?
A. We don't have one right now. You could call Ken Polansky's office. Ken is the chairman of the department of medicine and he circulates those.
Q. Has anyone at the university ever made inquiry of you as to your activities in consulting with the tobacco companies?
A. I don't understand that question.
Q. Has the issue of your consultation

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with the tobacco companies ever been raised by the university?

A. The university hasn't raised it, but I raised it with them.

Q. How did you raise it?

A. When Murray Garnick contacted me in 1988, and initially invited me to become involved, I had conversations with high ranking university officials including my department chairman and dean and some wise members of the faculty at that time and they all thought it was appropriate to do so and they have been in the loop in terms of my involvement in the two or three cases in the last few years.

Q. Have you ever looked to see if the university has received any grant monies from tobacco related entities?

A. No, I haven't.

Q. Would you consider the fact that if the university received grant money from tobacco related entities that that might raise a potential conflict of interest in testifying on behalf of tobacco entities?

A. I haven't considered that. I would find that an extraordinary stretch.

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Q. Do you study ethics as part of your work as an historian?
A. Do I study ethics?
Q. Do you know what "ethics" means?
A. Do I study the field of ethics?
Q. Yes.
A. I'm not an ethicist.
Q. You have written on ethics, haven't you?
A. I'm --
Q. Narrow issues?
A. On what issues?
Q. Some narrow issues on ethics in medical research.
A. Not that I recall. You know, I've written in widely in medical history and medical education and healthcare delivery, and certainly there are enormous number of ethical issue that pervade both the practice of medicine and of the delivery of healthcare in the healthcare system, but I have not written as an ethicist.
Q. You began your work, as I understand it, in August of '88?
A. That's correct.
Q. Was your first trial Chipellone?

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A. I never appeared at Chipellone trial.
Q. Did you testify in deposition at Chipellone?
A. Not for the Chipellone trial.
Q. For the retrial?
A. For the retrial. There was a deposition for the retrial. As you know, that case was never -- that -- never tried.
Q. Was that your first experience testifying in behalf of the tobacco companies?
A. That was my first experience with the deposition. As I've said before, I am testifying in behalf of my ideas, not on behalf of tobacco companies.
Q. The first time you expressed your ideas as it related to smoking and health issues was in the Chipellone matter?
A. The first time in terms of a formal legal proceeding, that was my first deposition.
Q. Did you raise the issue of your participation in that matter with the university before or after you participated in that matter?
A. Before.
Q. Has the university revisited the issue of your participation as a consultant for

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the tobacco company since '88?
A. Well, as I mentioned I have kept senior officials in the loop, so they are cognizant of my involvement.
Q. Are you aware of allegations leveled at the tobacco industry since 1994 concerning destruction of documents, suppression of research, bribing of medical practitioners?
MR. DODDS: Objection to form.
Q. Allegations. Are you aware of those allegations?
A. During what time period?
Q. From 1994, '5 to the present?
A. No, I'm not aware of those.
Q. Do you read any of the JAMA articles on the BW documents?
A. I have -- I know that JAMA did have articles on the BW documents. I have not read those articles.
Q. Just as a general proposition, in your work as an historian, was it easier, harder or it makes no difference to look at the history of a subject such as tobacco smoking and health from, let's say, the period you took was 1930 to 1964 --

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A. Correct.
Q. Is that true in Scott as well?
A. Yes.
Q. I assume it is. That period, is it easier to look at that historical period today or if you were back in 1964 looking at that period or doesn't it matter?
A. As an historian? Are you talking about the issue of the stated knowledge? My subject, the --
Q. Let's just --
A. The state of scientific knowledge and understanding?
Q. Assume for me you were hired to do what you were hired to do in this case, but you were hired in 1964, do you think your task would have been easier in 1964 than today or the same or --
A. If I were hired in 1964? I think I would have a hard time doing that. I was a school boy.
Q. Well, you were 17; right?
A. High school. I mean, if I were hired to begin a study today that had 1964 as the beginning point? Is that what you're asking?
Q. No. Let's put yourself as a historian -- let's assume that you could put

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yourself back in time in January of 1964 and you have all the credentials and education that you have now sitting here today?

A. I see.

Q. You're not 17 in high school.

A. So I'm an historian working in January '64?

Q. Yes. Would your task have been easier?

A. My task would have been about the same.

Q. And back in 1964 if you had undertaken this task, do you think it would have been relevant to look at some of the historical reviews that predated 1964; in other words, to look at what other people had done in terms of looking at the history of health, smoking, tobacco?

A. Well, actually I did that.

Q. Do you think that your task would have been the same in '64 as it was today?

A. It would have been a little easier in that regard, because the secondary literature was much thinner in 1964. Most of the secondary literature about tobacco and the history of cancer research and the whole panoply of subjects that I studied,

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most of those were published after 1964. So, from that sense, there would have been fewer things to look at and it would have been easier.

Q. Did you, as part of your study, look at any historical analysis that was done by researchers at the tobacco companies as to the state of the science from that 1900 to 1964?

A. Any published studies?

Q. Yes.

A. As we sit here today, I do not remember any histories of the subject or accounts of the subject written by individuals who were employed by the tobacco companies.

Q. Do you think --

A. There were histories of cancer and histories of public health and things of that sort that were part of my understanding of the subject, but I do not recall any history written by, you know, someone who was a tobacco company scientist.

Q. Would it interest you as an historian, as an expert in this case, to review a survey of the literature that was done by somebody that was employed by a tobacco company in 1963 to determine what they thought the status was of the state of the medical science concerning smoking

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and health and disease?

A. Well, first of all, there are two -- your question is compound. Number one, I thoroughly examined the existing world's literature myself. So, from that perspective, I did as thorough an examination of the published literature as was humanly possible. I literally read every article, every article, that was published in the world's literature 1930 to January 1964. So I did a very systematic review of the subject. If an article had been published on the subject written by anyone, I don't care if it's someone who was employed as a tobacco company scientist or someone at the National Institutes of Health, if it was published, it was of interest to me because that was part of the marketplace of ideas. It was not my project or concern to look at unpublished materials and, you know, interim reports and, you know, the huge amount of internal conversation that goes on in any company or any organization. You'll have the same thing in a medical school, in Memorial Sloan-Kettering, National Institutes of Health. So I didn't even attempt unpublished material, but it wasn't necessary because, for my purposes, the marketplace of scientific ideas is

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the published medical literature and that's what I reviewed.

Q. What is the source of the material for the public medical literature?

A. What is the source?

Q. From where does that information come?

A. Do you mean who does medical research or where did I find articles?

Q. You read 1400 articles.

A. Correct.

Q. Did you categorize them into different areas as to where they originated from, those articles?

A. I'm not sure I follow that. What do you mean characterize --

Q. Are they written by sports writers, are they written by actors?

A. Scientists. Physicians and biomedical scientists. This is scientific literature; it's not Reader's Digest. It's not an actor talking about his views of tobacco smoking for U.S.A. Today. No, this is the scientific literature.

Q. So you -- the 1400 articles you read, you went to the library and said I want to

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see what the scientists of 1930 to '64 had to say about tobacco and cancer or tobacco and health? What was it?

A. Tobacco and lung cancer.

Q. Tobacco and lung cancer. Did you look at any other specific diseases?

A. I looked -- no, I did not. I looked at lung cancer and tobacco.

Q. And you're not prepared to offer an opinion, at least an historical opinion, on diseases other than lung cancer in the Scott case?

A. I am -- part of the review of tobacco, including the Surgeon General's course -- report, does discuss the consequences of tobacco on other organs. So insofar as I read the Surgeon General's report and some of those studies, that would be included. But I did not specifically go out to study bladder cancer or to study peptic ulcer or anything of that sort.

Q. Or emphysema?

A. No. The focus was lung cancer.

Q. Was that by choice or were you instructed to focus on lung cancer?

A. That was the mutual agreement.

Q. If I could give you an article that

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was written in 1963 by a tobacco scientist that traced the history of literature in terms of smoking and health and disease, would that be of interest to you as an historian?

MR. CONGROVE: Objection. Asked and answered.

MR. DODDS: Object to the form as well.

A. Well, as an historian of medicine, I was interested in all the literature that I could obtain pertinent to my subject. And also you have to understand what the borders are, and in my case the borders of this project was to publish scientific literature, so I would be especially interested in that if that had been a published study.

Q. Did you ever ask the tobacco companies if they had a research library of medical articles concerning smoking and health and disease?

A. I had no -- no, I had no reason to do that. I had complete access to the world's literature myself, as an independent investigator.

Q. And so we're clear on this, when you refer to the world's literature, you're not

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suggesting, are you, that the literature that's in the archives, libraries, law offices of the tobacco companies attorneys are part of the world's literature?

A. I'm talking about the published scientific literature pertaining to lung cancer and health hazards of cigarette smoking, and these are obtainable from the Index Medicus, which is the guide to the word's scientific literature, and that's how I generated my bibliography of sources to be looked at.

Q. And in one of your depositions, I think you testified you spent 2,000 hours reading these articles?

A. About a 1,000 hours. This is 19 -- this is 1988 and 1989 and that was a summation that included -- most of the time was actually spent on the articles themselves, but it also included the work that I did in the secondary literature, and things of that sort. So that was the total, not just articles, but all the work that I did. There was work beyond the primary published literature.

Q. And can you tell as you were reading those -- you didn't keep a cheat sheet as to whether these scientists were from medical

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schools, universities, the tobacco companies?
A. I didn't keep such a sheet.
Q. Do you know --
A. If you're interested you can look at the articles and identify as to what institutions the people came from.
Q. Is there a list that is not in your handwriting that is worse than my handwriting that I could actually read? Is there a typed list?
A. Everything is in -- you have the best available. I did everything by hand. And if you don't have better copies, you can ask Mark Edell for the originals.
Q. He still has the originals?
A. He still has the originals. He took them to have copies and to have his staff type them up, and despite multiple requests he never returned them.
Q. He has original handwritten notes?
A. He has original handwritten notes. He was going to have his staff type them up, because, as you point out, I've got one of the world's bad handwriting --
Q. And mine is worse.
A. -- and I was going to help him with any

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words he had difficulty deciphering, but he never returned those to us. So I am now without my originals and have been for the last ten, eleven years.

Q. Let me -- well, what did I mark? 6 was the notice? Is 7 the accurate version of your report in the Scott case?

(Plaintiff's Exhibit 7, report in Scott case, marked for identification, this date.)

Q. Is No. 7 an accurate version of your report in the Scott case?

A. Looking at it quickly, it seems to be.

Q. Did you prepare that report?

A. No, I did not.

Q. Do you know who prepared it?

A. I'm not certain. It was someone at the Shooke Hardy firm. And whether it was David Woods, whether it was Billy Randalls, whether it was someone else, I don't know precisely who did it.

Q. Shooke, Hardy is the law firm for which defendant in this case?

A. I don't know.

Q. In any event, you did not prepare that report?

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A. That's correct.

Q. This will be number 8.

(Plaintiff's Exhibit 8, Defendants' Joint Expert Reports Index Volume 4, marked for identification, this date.)

Q. Now, Exhibit 8, I'll represent to you, is provided by your counsel, somebody associated with your counsel, and I'd like you to take a look at it and can you tell me what Exhibit 8 is made up of.

A. The first article is by Dr. Churchill, 1948, which is a very important special article he wrote reviewing the state of understanding of cancer of the lung as of 1948, and that's, I thought, an important and useful article.

There is an article by Luvin, Bullstein and Gerhart, from Journal of American Medical Association in 1950, which is an important study. It was one of the early retrospective studies -- there were several of them published that year, as I mentioned this morning -- but one of the earlier retrospective studies linking cigarette smoking with primary carcinoma of the lung.

There is Tobacco Smoking as an

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Etiological Factor in Disease, Cancer, published in -- it's hard to read these -- from Cancer Research. I'd actually have to reread the article to explain why it is listed in here, but it's -- it looks as, you know, one of the studies from the early 50's that helped provide evidence linking the two, but I'd have to read that article.

There is an important paper from Winder, Graham and Korniger, Experimental Production of Carcinoma and Cigarette Tar that reviews the evidence to date in terms of the skin painting experiments.

Let's see, what's next? There is another article by Dr. Barr, Carcinogenic Activity of Cigarette Smoke Condensate, Effective Trauma and Remote Radiation.

Q. These articles, did you select these out to be provided?

A. These are all articles that I have read and that I have used. Some of them I am extremely familiar with; others that I am -- others I haven't reread quite as recently.

Q. You're welcome to go through them all, but you'll see as get further in, as then your handwritten copies of notes, the original of

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which Mr. Edell has kept, and you've got some other articles back towards the back, and my question is, did you select these for any particular reason, the articles, at least?

A. I did not select the articles. I presented the concept and ideas. I mentioned the articles and I think that the articles themselves were selected as examples illustrating the points that I was making.

Q. Do you know if the attorneys selected those articles to include with your report, or did you have input into it?

A. Well, I had input into it, because I saw the reports and I saw the citations and I saw -- if they report -- if they reported something to you, it came from work that I did and they would send it to me and I would review it, but I did not physically prepare the reports. Or when it came to decide which of these skin painting articles or retrospective studies or prospective studies, or whatever it may be should be included, if they were acceptable to me I approved the statement, but I did not say you study A or study B. They had some idea of the sense that I considered things important just from conversations that we

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had, but the actual composition of the report was done from the law office.

Q. Did you provide editorial comment on the report?

A. When reports would be sent to me, I would read them, and in some cases -- as you yourself are pointing out, there are a lot of cases and it's easy to get them confused with each other and you're doing this all the time. I'm just involved with an occasional case, and it's even more confusing for me. So if you're looking at the cases that you mentioned, Scott, Blankenship, and then Anderson from this year, in some instances I would read the report and approve it and in other instances I do remember having minor changes to suggest. I cannot tell you which report I approved without suggesting changes and which ones I did have the changes to.

Q. So, Exhibit 7, the report in this particular case that has been submitted on behalf of the tobacco defendants, you couldn't tell us, as you sit here today, whether or not you provided editorial input into that report?

A. Well, I approved it and that itself is editorial input. Whether I suggested any changes

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to the draft, I don't remember. As I said, I did not compose it, but I approved it.

Q. Did you do anything unique to the State of Louisiana with respect to your report in the Scott case?

A. No, I did not.

Q. Are your opinions, if they ever are offered in the Scott case, are they going to be similar to the opinions you've offered in other cases or is there anything in particular you're going to say with respect to Louisiana?

A. Well, as you undoubtedly know, I don't know precisely what I'm going to be asked or what I'm going to speak on in the Scott case, but the general subject matter that I'm speaking on is identical to the two cases and I do not have any unique view of the material applicable to Scott case that is not equally applicable to the Blankenship case.

Q. If I could just quickly run through the cases you have testified in to make sure I have it straight. Okay?

A. Certainly.

Q. You testified in the Chipellone in a deposition format in Chipellone?

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A. Correct.

Q. And the retrial or hearing on retrial?

A. I don't know anything about that. I gave one deposition. That was part of the retrial of the Chipellone case. And that's all I know about it.

Q. And you testified in deposition in the Mississippi AG action?

A. Correct. I believe that's correct.

Q. And you testified in the Oregon action. Was that a private case or AG case?

A. The Oregon was a private smoker case and that was not a deposition. That was a court testimony. Mississippi, as you know, was a deposition. Those cases were settled.

Q. Did you have input into the settlement of the AG cases?

A. Did I have input?

Q. Yes. Were you consulted?

A. No, not at all.

Q. The Washington case was an AG action?

A. Correct.

Q. That was a deposition or did

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that --
A. That was a deposition, and as all the AG cases, as you know, with I guess the exception of Minnesota, that was settled.
Q. Were you consulted for Minnesota?
A. I did not testify in the Minnesota case.
Q. Were you consulted on that case?
A. I was approached about it. There was talk at one point that I might be asked to testify, and, in fact, I was not asked to testify.
Q. Have you ever turned down a request by the tobacco companies to be a consultant?
A. Yes, I have.
Q. What case?
A. Well, I don't know the names of the cases, but I have turned down, if I have been too busy to work at that time.
Q. Have you ever refused to consult for the tobacco companies because of what you perceived as a conflict of interest?
A. You mean as I defined it before, university?
Q. In any definition.
A. No. A conflict of interest in medical skills and medical science today has focused on

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this issue of investigator bias. If you are working -- if you are testing a drug or a new instrument or piece of apparatus or equipment or treatment and you have a financial stake in the outcome, that clearly has the potential to create bias and influence your collection of data and your interpretation of data. I am not funded by the tobacco company, I've had no relationship with either the law firms or the tobacco industry except for these specific cases. There is no connection at all between these cases and my main work as a physician and medical educator and writer. So there is no conflict of interest as we at the university would use the term.

Q. When you say you're not funded by tobacco companies, you are paid by the tobacco companies, aren't you?

A. I have been compensated for my time. I was referring you to the grants that you pointed out before. The tobacco companies do not support my research, my writing that I've done in the history of medicine and in medical education.

Q. Do you know how much money they have paid you over the years since August of 1988 to testify in their behalf?

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A. Oh, I don't know precisely. No.
Q. In excess of a half a million dollars?
A. If you are looking at the total payment from 1988 through the present, you know, over twelve years, I'd say half a million dollars would be a reasonable approximation.
Q. You testified in the case Kotler vs. The American Tobacco Company?
A. That's correct.
Q. That was a trial?
A. That was a trial.
Q. Do you remember testifying in that case that at least through 1964 the A.M.A. did not take a position on smoking and health?
A. Yes.
Q. Is that still your opinion today?
A. Yes, the historical record hasn't changed and I would agree with all of my testimony from the Kotler case today. I do not view anything differently today from what I did at the time, and, you know, as I point out -- you asked -- either you or the other gentleman -- what type of preparation do I do? Well, I want to give you the fairest, most accurate answers, and I want to be

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consistent. Part of my preparation is to reread my earlier depositions and court testimonies, the three testimonies that there have been, and I would concur with everything I said in Kotler.

Q. So you have read Engle, Anderson, Kotler? Any other case you've testified in?

A. There have been three court testimonies and three or four depositions prior to today. And as part of my preparation for this deposition today, I did reread both the depositions and my courtroom testimony.

Q. And there's nothing as you sit here today that jumps out that you -- that says, I wish I hadn't said that, or I wish I said that differently?

MR. DODDS: Object to the form.

A. As I sit here today, I would agree with my testimony both in the previous court cases and in the depositions.

Q. Did you ever look from a historical perspective as to why the A.M.A. didn't take a position on smoking and health before 1964?

A. I did not study the history of the A.M.A. or its attitudes or views.

Q. Are you a member much?

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A. No, I'm not.
Q. Have you ever been?
A. I was a member for one year when they gave me a grant. With the exception of that twelve-month period, I have not been a member.
Q. Have you read any documents, seen any news articles that would suggest that for a certain period of time that tobacco had devised a strategy to fund the A.M.A. in order to buy their silence in the smoking and health controversy?
MR. DODDS: Objection to form.
MR. CONGROVE: Objection to form.
A. Could you please repeat the question.
(Question read.)
A. To answer your question, honestly, I have heard that allegation before, mainly through plaintiff lawyers in some of these other cases who have raised that question, but I have not studied that and I have not seen any documents that would allow me to draw any conclusions about that one way or the other.
Q. If you saw a document that was drafted by an attorney for the tobacco companies, would that interest you?
MR. DODDS: Objection to the form.

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A. What do you mean by would it interest me?

Q. As an historian, would it interest you to read a document drafted by an attorney for the tobacco companies that suggested there is evidence within the tobacco industry that they paid off the A.M.A. for a certain period of time?

A. That's a question that is based upon some false premises. You know, as a historian would you be interested in a document? As a historian would you be interested in a document on -- for biography of Abraham Lincoln? In a general sense, as an historian, you're interested in history, you are interested in documents. That's what we do. But we also have to place -- we have to walk the balance. On the one hand, we need to be comprehensive in the work that we do, the study that we do, and this was illustrated in my work by reading the entirety of the world's published literature. But, at the same time, you have to know how to put borders around your work, otherwise you're spending your whole life reading and writing and not making any progress, in terms of conceptualizing and writing things. So, for my purposes, I was studying the history of the scientific understanding of lung cancer, the

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history of the scientific understanding of the health hazards of cigarette smoking, in a precise period, 1930 to January 1964, and that's what I did. And I read secondary literature that helped me understand that topic better. But I did not feel it was necessary for me to do a history of the American Medical Association, a history of the tobacco industry, a history of the NIH, a history of Memorial Sloan-Kettering, etcetera, etcetera, as part of this project.

Q. Is it not relevant to your historical analysis the position the A.M.A. throughout the period from '30 to '64 --

MR. CONGROVE: Object to form.

Q. -- on smoking and health?

A. The position of the A.M.A. is relevant and that actually is part of my testimony, and as you pointed out a few minutes ago, the A.M.A., prior to 1964, had not taken a position on the issue.

Q. And if the A.M.A.'s position on smoking and health is relevant to your historical analysis, wouldn't it also be relevant to determine whether or not they were biased in their presentation of their views?

A. Their -- actually, as we speak, I do

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remember one article on the A.M.A. that I read, and that isn't part of my bibliography, and it explains that they were on the tail end to accept the clinical epidemiology as a legitimate way to draw conclusions about the causation of chronic disease. Some people at the beginning, some people are at the broad middle, some people are at the tail end. And I take that at least for the moment as face value. This has to be taken in context of the entire world's literature, which is what I studied.

So when I study what the scientific consensus is or what scientific attitudes are, there is a period of time. You know, you will always have people with different opinions. The A.M.A. had one opinion. Others shared that opinion. But I didn't -- it was not necessary for my description of the state of knowledge about the causes of lung cancer to start going into personal histories and biases of anyone who may have spoken on it. You know, couldn't some of those who thought there might have been a relationship been biased in some way? I did not go into the subject of bias on anyone. They had their data, they spoke, they gave their opinions, but I didn't do

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biographies on any of the 1400 articles of people who spoke.

Q. Would you agree that the position the A.M.A. on a correlation or a relationship between a smoking and any particular disease is more significant than the opinion of a particular scientist?

A. Well, the A.M.A. opinion is certainly important. They certainly were one of many important organizations that was speaking, including National Institutes of Health, National Cancer Institute, Memorial Sloan-Kettering, U.S. Public Health Service, American Public Health Association, American Cancer Society, American Heart Association. One could go on with the list of important organizations that spoke constructively on these issues. And scientists also spoke on the issue, and the importance of that often depended on the individual. Some scientists were more notable than others.

Q. The period, though, that you were studying from 1930 to 1954 in particular, don't you think it was important to figure out the potential biases of a group such as the A.M.A.?

A. Well, your question is based upon some

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inaccurate and incorrect premises, because opinions are subject to the scientific marketplace. It's not that any organization had an opinion and could influence policy. Everyone was speaking up. Their ideas were assessed by others. Some agreed, some didn't agree. And I think that one has to understand more properly the nature of scientific work and scientific communication than is suggested by the way you're phrasing your questions.

Q. What position did the tobacco industry espouse between '30 and '54 on the smoking -- '30 and '64 on the smoking and health issue?

A. Well, the first statement that I'm personally aware of -- and as I said earlier I am not here to testify on history of tobacco company, their attitudes, their behavior, their responses. It's not what I'm testifying on. But insofar as they did issue the frank statement and I've seen that as part of my work, I'm aware of that, that is the first statement that I've seen, it's very reasonable in my view. As I said before, it's a very reasonable statement, in the context of the scientific knowledge of the day. I'm unaware of

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any statement before then. On the other hand, the medical community was not making statements until the 1950's either. So if there was silence of the issue before then, it was a broad spread silence because of the viewpoint that the cause was unknown -- and I'm speaking before 1950 -- the cause of lung cancer was considered unknown, unknowable, and there was no evidence before 1950 to link cigarette smoking with lung cancer. After 1950, earlier reports start coming in, this becomes an area of very active inquiry worldwide, and the frank statement is the first statement I'm aware of from the tobacco industry. And, as I said, it's very consistent in the context of when it was written.

Q. At what point in time, if you can offer an opinion, if you believe it to be the case, at what point in time would it have been inappropriate to publish the frank statement as an accurate statement on the state of knowledge in that area?

A. Could I see the frank statement?

Q. Did you say it?

A. Could I see the frank statement?

Q. I'm sorry. Was it marked, sort

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of? Do you have a copy?

MR. DODDS: Please note my objection to the form and the foundation for that question.

A. I'm not certain it is possible to answer that question directly because it's a question based on inaccurate and incorrect premises. Historians deal with what happened, not with what didn't happen or what might have happened. You could equally have asked me what would have happened if Napoleon had the B-52 Bomber. The fact of the matter is that this statement was published in 1953 -- or, excuse me, in early 1954, and in my judgment it accurately reflects the scientific context of the period. And I think that's about all I'm able to say about it or that any respectable and responsible historian could say about it.

Q. You've already offered the opinion, have you not, that at least by 1964, in the aftermath of the Surgeon General's report, a controversy was over at least in the scientific community; is that a fair characterization?

A. Right. Yes, it is.

Q. So if you're offering the opinion

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in the Scott case, from 1964 -- sometime in 1964 -- I don't know what "the aftermath" means --

A. Okay.

Q. -- but a reasonable period to digest, I think you said, the '64 report, at some point in '64, if the controversy was over, as you sit back, knowing everything you know that occurred between 1930 and '64, could that statement still be published?

MR. DODDS: Object to the form.

A. Well, if you're jumping far ahead -- you know, scientific knowledge was changing -- I would say that certain modifications would be necessary, because it -- my findings, as I pointed out, is that a scientific consensus does emerge in the aftermath of the report, which means that the type of active controversy, agreement, disagreement, let's all move forward together that we were discussing earlier has ended, it doesn't mean that responsible scientists could not accept -- let me rephrase that. It doesn't mean that you did not have responsible scientists who were still sceptical of the hypothesis, but it does quiet down and so I think a statement such as "there is no agreement among the authorities regarding what

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the cause is," something of that sort, would not be as accurate if you're looking post 1964.

Q. And that's -- and in fairness to you, you didn't look post '64, did you?

A. That's correct. As I've stated all along here today and in the previous depositions and testimony, my work goes through 1964, but not '64 onward.

Q. And you could not offer an opinion in this case on the state of medical knowledge at any point subsequent to '64, or you've not been asked to at least?

A. I've not been asked to.

Q. Could you?

A. What do you mean could I?

Q. Could you offer an opinion post '64?

A. In terms of --

Q. Same issues you look at from '30 to '64.

A. No. I have not, in the same systematic way traced things forward, you know, looking at all the studies that came out. Certainly my research included '64 and the response to the immediate response to the report, but if you're talking '68,

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'72, '80, '95, 2000, no the answer to that is, quite correctly that I am not -- I couldn't -- I could do it in the sense of if I had the time and interest, which I don't, I could do such a study, but in fact I haven't done such a study and I'm not prepared to speak on that.

Q. If you were asked in 1964 by the tobacco defendants whether it would be appropriate to publish the frank statement, is it fair to say that not -- that you would not recommend they do so without certain revisions? 1964.

MR. DODDS: Objection to form.

A. You know, this question goes outside of my expertise. I'm a medical historian and I deal with the scientific ideas and their evolution in the social context and I deal with what I've studied. Even in 1953 or '54 when this did come out, I would not be in a position to tell a tobacco company what is proper to say, what is improper to say, and I really have no claim to speaking on company behavior, company responses or public relations or what to publish. So you're really going into areas that I am not qualified to speak on and I --

Q. You've already testified that you

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thought that the letter was accurate or that the announcement was accurate in January of 1954; correct?

A. I believe it was an accurate reflection of the conditions of the scientific knowledge at that time.

Q. Do you believe it's an accurate reflection of the condition of the scientific knowledge in 1964?

A. Let me see it again.

MR. DODDS: I think that question has been asked and answered and I object to the form.

A. I think if you're looking after the Surgeon General's report, this would -- and I'm looking specifically at the scientific part of this, "Distinguished authorities point out that --"

Q. Sorry. Could you please just -- I don't know if they can pick you up.

A. I'm looking at the part, "Distinguished authorities points out that medical research of recent years indicates many possible causes of lung cancer; that there is no agreement among the authorities regarding what the cause is; that there is no proof that cigarette smoking is one of

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the causes; that statistics purporting to link cigarette smoking with the disease could apply with equal force to any one of many other aspect of modern life."

Indeed, the validity of the statistics themselves is questioned by numerous scientists. The scientific reports, you know, I think is very accurate for January of 1954. If you are going mid 60's forward, then we have a decade's worth of new work, we have the Surgeon General's report, and there would be modification necessary.

Q. Including the conclusions that there was no evidence linking cigarette smoking to cancer?

MR. DODDS: Same objection.

A. What year are you talking about?

Q. '64.

A. Well, I think that it's been my testimony that during the 50's and 60's -- well, there are really two parts to that, two answers, two parts to that question. It all along has been part of my testimony that new scientific evidence continued to be generated in the mid 50's, the late 50's, the early 60's, the mid 60's, so the

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1964 Surgeon General's Committee has the advantage of evaluating new work that did not exist in 1954; new epidemiological and statistical techniques are being created at that time, including in the 1959, late 50's, early 60's. So there's more to draw upon and we have the Surgeon General's report that drew conclusions about causality. But it's also important to recognize that science has a value judgment, and what change was not so much the evidence per se as attitude towards epidemiology and statistics; the issue of statistical proof versus experimental proof. Experimental proof had been the gold standard accounting for essentially every advance in medicine for the previous 500 years, and there were responsible medical scientists who even after the Surgeon General's report did continue to feel the case was not proven because of the lack of the experimental evidence. So that qualification has to be put in there as well: That there could be disagreement with the Surgeon General's report and that this could be found among responsible scientists for the reasons that I give.

Q. As part of your testimony in this case, you're testifying as to the state of the

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medical scientific knowledge on smoking now; correct?

A. Correct.

Q. You're not prepared to and are not offering an opinion on the public awareness of that issue?

A. That is correct.

Q. Or the awareness of a particular percentage of the population, whether it be women, children?

A. That is correct.

Q. You never did any analysis to determine, for example, what percentage of the population was aware of the Surgeon General's report?

A. That is correct.

Q. Do you recall reviewing the Surgeon General's report when you were a youth?

A. I did not read it at that time.

Q. Were you aware that it came out?

A. I was aware it came out. I told my old man not to smoke.

Q. Pardon me?

A. I was telling my old man not to smoke. I said, if you choose to smoke, you know, it's at

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your own risk.

Q. And do you know if the scientific community -- the scientific community would include the tobacco defendants, would it not, their scientists?

A. Sure. The tobacco scientists were responsible members of the overall scientific community, of course.

Q. Did you read any articles that would suggest that the tobacco scientists came out in support of the theory that there was a link between smoking and certain diseases?

A. Well, we know that they did.

Q. When?

A. All you have to do is read the published literature.

Q. When?

A. Even in the 50's, some of articles that provided evidence that tightened the link between cigarette smoking and lung cancer were performed either by scientists employed by tobacco companies or by scientists who had received research grants from tobacco companies.

Q. Any in particular that stick out in your mind?

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A. There are, and this is where I reviewed these things always before depositions and it still filters out of my mind, but I believe that, for example, that one of the important studies showing that chemical smoke contained benzpyrene, a known carcinogen was performed by Bentley who was a scientist at the American Tobacco Company. That report, as I recall, was published in 1958. There was at least one skin painting experiment that was performed either by a tobacco scientist or someone who was -- whose research was funded by the TIRC. I believe that was a study by Bock, but I would not swear to that right now.

Q. By who?

A. B-o-c-k. There were studies pointing out -- these are just samples, but there were a number of studies that had results that were harmful to the tobacco industry that were performed and published either by tobacco company scientists or by scientists who received funding support from the tobacco industry.

Q. Did you ever read any published articles by Alan Rochman of Reynolds Tobacco?

A. It's possible that I did. I read, you know, over a thousand articles. I am not

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remembering that name as we speak. It's not a name that has come up in conversation in any of the handful of depositions or cases I've been involved with.

Q. As a historian reviewing the status of the scientific or medical knowledge of smoking and health and disease from '30 to '64, would it interest you to review internal company documents that would suggest that published papers by their scientists were being edited by lawyers?

MR. DODDS: Objection to form.

A. Well, that's a compound question with many parts to it, and also some erroneous assumptions as well.

Q. First tell me the erroneous assumptions.

A. Well, first of all, would I be interested? You know, as I said before --

Q. That's a question.

A. -- in a general way, you know, you're interested in everything, but if we are talking unpublished research, it's not something that is -- you know, affects the world's scientific understanding, and of course we have to keep in mind the context, that this is one of the most

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intensely debated medical issues of all times and we have intense, and intensive scientific efforts throughout this country and throughout other countries investigating this. This is not just the tobacco companies that are determining the knowledge.

So, number one, if I am to get an assignment done as a historian, I have to have my borders, and if the topic is the existing state of knowledge, then that's what I have to look at. And I'm not interested, from that perspective, in unpublished results from any laboratory, Dr. Graham's laboratory, Dr. Winder's laboratory, Hammond & Horn's laboratory. There's an enormous amount of unpublished data that is a part of the work of all science and none of that was of concern to me from any laboratory. To understand the medical marketplace I needed to know the medical marketplace, and that was the published literature and that's what I did and that's what I did comprehensively.

And there is assumptions, if they had suppressed research and so forth. I'm not advocating supressing research. Please don't let me misstate myself. But I would say two things in

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response to your question: If there was research suppressed, number one, you have to have evidence to support that. And I am personally unaware -- I haven't examined company behavior, company documents. I have no personal evidence of suppression of research.

Secondly, in the context of that question, one must remember that there are lots of legitimate scientific reasons not to publish work. It is an inaccurate view of science. And part of my task as a teacher and a medical historian is to point out how science works. To think that every piece of data gets published is incorrect and it would be wrong. All the time you have preliminary results that don't pan out. Sometimes you do experiments because you want to duplicate someone else, just to make sure you believe it, but not to publish again because it's been published fifteen times, and it would have not have changed the status of knowledge at all. There are many legitimate reasons not to publish your unpublished effort.

So I have no information A) that they suppressed information. I cannot comment -- speak with you on company behavior. As I say, we

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have to remember that there are lots of legitimate reasons that people don't publish information they have. And it would have made a difference only if the scientific community had come up with something totally -- excuse me, only if the tobacco scientists had come up with something totally extraordinary that the rest of the world's scientific community did not have: If they had produced cancer human beings in their own laboratories and didn't release that data. So, it would -- even if suppressed, it wouldn't have changed the understanding, unless it was huge and different.

Q. And your answer would be the same if the material was published research, that is, it was in the world community of published research, if it was edited by lawyers?

MR. DODDS: Objection to form and foundation.

A. I did not follow that question. Could you please repeat that.

Q. Your answer was based upon the assumption that my question assumed that we were talking about unpublished literature. I want to take it a step further --

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A. Okay.

Q. -- and say that scientists within a tobacco company published literature that's out there in the medical journals, scientific journals, and it's edited by lawyers to review -- who review it and say we don't want this in her, let's take that out, would that interest you at all as a historian in reviewing the material you've reviewed and arrived at the conclusions you've arrived at?

MR. DODDS: Objection to form.

A. Well, as I said before, for purposes of my testimony I'm interested in the published material. I'm not interested in all the steps. You're asking questions that don't pertain to what my testimony is about; that the various internal steps and how scientists derive ideas and all the internal to and forth, and is this idea right, is this idea wrong?

You know, if one wishes to understand the medical marketplace of ideas, your starting point is the published literature and not the various steps that it took to get to that point. And I'm not saying that that's an uninteresting question, but I'm saying it's

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different and it's a different set of issues and I'm not going to speak on issues that I didn't study or that I'm not prepared to comment on.

Q. I'm talking now about a published, in the mainstream, you can go down to the Library of Congress and you look in 1962 and see an article that Rochman wrote on carcinogens and tobacco smoke.

A. Uh-hum.

Q. And he writes in internal documents and says, of course we didn't mention the three carcinogens because of their cancer promoting activity. That was removed from the final manuscript. It wasn't mentioned in the article. Would that interest you as a historian?

MR. DODDS: Objection to form.

A. Well, you know your question is, again, misleading, and I'm going to point this out every time you do this. First of all, I read --

Q. As you have in seven depositions and three trials.

A. No, there have not been seven depositions. This is -- there have been four depositions. There have been a total of seven episodes over thirteen years now. So we should keep our facts

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straight.

But first of all, the marketplace of ideas begins with what is out there. Now I don't know what happened at the company. As I've said, I've had no -- no exposure or scrutiny of internal company documents at all. So I don't know if that happened or not. But it's also not clear that it would have made a difference even if it did happen, because other people were identifying the same results. And if it did happen, I, as an historian, would need more than one snippet after document. You can't make accurate statements in history without verification and validation. Now I just published a book last November. I looked literally at millions of documents, and documents were helpful, but they -- but sometimes you see something in one case that was contradicted in another, and you have to put this in the context and get verification. To draw large conclusions from one snippet of one internal company document is not a justifiable approach to any responsible historian.

So, if they -- if they did, I'm not saying that I approved that, but before we say they did, I'd like to see a lot of evidence that

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it indeed happened, more than one snippet of a one communication in a company that has millions and millions of documents. And also if you're trying to assess did this make a difference? It may not have made a difference even, if you didn't like the act. You would have to know what was suppressed, if it was suppressed at all. And if that's already known to the scientific community, you know -- you know it's very possible they said, you don't have to publish this because this is already known.

Q. As part of your review, did you look at what was known at any particular time in terms of the carcinogens in tobacco smoke?

A. That was part of the study, yes, the chemical constituents.

Q. So would you be prepared to offer an opinion that in 1953, there were 39 known carcinogens in tobacco smoke, in 1956 there were 58 -- I'm just throwing the numbers out.

A. You are just throwing the numbers out. Th first carcinogen was identified in 19-- I would have to check the year, but mid 50's, the benzpyrene, and later others were identified an these are part and parcel of the Surgeon Genera

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report.

If you're asking what has changed from 1954 to 1964, one of the things that has changed is the successful identification in cigarette smoke of a number of carcinogens, the most important of which was benzpyrene. So that did change and it added to the coherence, as the Surgeon General called it, the biological plausibility of this tobacco hypothesis, though it was -- these were also present in very low concentrations. So what it meant to have benzpyrene or other chemical carcinogens in exceedingly low levels, exceedingly low concentrations, that wasn't clear either.

Q. How many years before -- I don't think you put a year on it, mid 50's, that it was identified in tobacco smoke?

A. I'm sorry?

Q. Did you say the mid 50's, benzopyrene was identified in tobacco smoke?

A. My recollection that the first identification of benzpyrene in tobacco smoke was done by Dr. Cooper, who published in 1953. That's my recollection.

Q. Do you know when Philip Morris,

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Reynolds, Brown & Williamson, American Tobacco, Ligette, any of the companies, had that same information?

A. Well, that information is immediately available when it's published. So they had it at the same time that the rest of the world's scientific community had it.

Q. As a historian, would interest you to know if they knew it before 1954, 1953?

MR. DODDS: Objection to form.

A. As a historian speaking to the state of scientific medical knowledge, the fact is that the first successful identification occurred in 1953, and that's what's mattered. And it would not have mattered if anyone in any laboratory that had circumstantial evidence or partial evidence or even more detailed evidence proving this and for whatever reason hadn't published. It wouldn't -- it wouldn't have affected the opinions that I'm presenting, in terms of the stated knowledge.

Q. So as a historian, if hypothetically you assume that all of the tobacco companies knew five years previous to 1953 that there were certain carcinogens in tobacco smoke but didn't disclose that to the public, that won't

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matter to you?

MR. DODDS: Objection to form.

A. You know, there is so many incorrect assumptions in your question.

Q. You haven't look at any internal document, so you don't know they're incorrect; correct?

A. Even --

Q. Are they incorrect because --

MR. DODDS: Could he answer?

Q. Tell me why they're incorrect, one at a time, the assumptions.

MR. DODDS: I object. You're refusing to allow the witness to answer your prior question. If you are withdrawing that question --

MR. MAISTROS: I'm not withdrawing it.

Q. Tell me the incorrect assumptions.

MR. DODDS: Be polite and allow him to answer your question.

A. First of all, the knowledge was available in 1953 to everyone. So the world's scientific community was aware of that benzpyrene had been demonstrated in cigarette smoke with Dr. Cooper's publication in 1953. This was a very important

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issue because scientists had been trying for a while to do that. And there was a major negative studies in 1952, only a year before, and Cooper succeeded mainly because he had new techniques and new apparatus that he used. So this was a breakthrough. This is available to anyone.

Now, one has to understand how science works. And part of the process of science, in all fields, not just smoking and health, but all fields, is confirmation and replication. And particularly when someone for the first time has positive results, as Cooper did, when a number of noted scientists in the preceding few years had tried to identify benzpyrene and had been unsuccessful, the first question the scientific community will ask and did ask is is this real or is there something fluky about how Dr. Cooper did his work, which means that you repeat and confirm the results, and that is precisely what was done. There were approximately, oh, I don't remember the exact number, but, you know, maybe ten or fifteen confirmations of that work in the next few years, one of which was done by a tobacco company scientist. And by confirming that this indeed was

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real and you could do it, that was an important contribution that was made by these others. They weren't original discoverers, but they showed that this was real, and this particular tobacco company scientist a few years later was one of those who helped demonstrate it was real. But this knowledge is out there for everyone to see. There's no suppression, it's out there for everyone to see. And confirmation and replication, as I say, is an important part of good science.

Q. And I go back to my question. And I'll rephrase it. You can forget my last question, if you would like. Would it be relevant to you as a historian in arriving at your conclusions in this case if you could be presented with documents showing that three to five years prior to 1953 the tobacco companies had knowledge of the existence of those very chemicals in tobacco smoke?

MR. DODDS: Object to the form and to the lack of foundation.

A. You're asking questions that are compound, and, again, go beyond my area. Number one, as I've said before, I don't have any information on

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company behavior. Number two, we know what did happen in the published scientific community, and that's what I've reported on. Number three, one can assume anything one wishes: Well, they had evidence that it was suppressed. I think if one is going to make charged allegations of that sort, then the burden -- in any historical subject, lots of historical fields are charged, and you need evidence to support that, and good, hard, reliable evidence, not one snippet of one letter. For all one knows, there could be another letter saying, you wanted to suppress it, terrible idea, forget it, forget you even suggested it.

So you need rigorous critical assessment and then you also have to ask the issue of it have made a difference at a time that many other people were publishing the same results even if a another scientist had information. And, as I said before, there are legitimate reasons not to publish.

So there are a lot of qualifications to this answer and the whole subject does go beyond what I'm testifying, but there are a lot of qualifications that come out from the way you phrased that question.

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Q. Why was it significant that scientists discover the existence of benzopyrene in tobacco smoke in 1953?

A. Why was it significant? In terms of developing the argument that cigarette smoking causes lung cancer.

Q. When did the scientific and medical community know there was a link between benzopyrene and any cancer?

A. The link between benzpyrene and cancer was an established link, and I don't know offhand when that was first described, but, suffice it to say, if we're examining the state of knowledge in the mid 50's, benzpyrene was a, not only a known carcinogen, but a known potent carcinogen. So --

Q. An animal or human carcinogen?

A. Both, as I recall.

Q. Could you put an earliest time period on it when you were --

A. I'm sorry, I don't know, and I don't want to guess in proceedings that are as important as these. But it was a known carcinogen.

So, discovering benzpyrene in cigarette smoke was notable in terms of developing experimental and laboratory evidence to give some

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biological plausibility to the statistics. So that was an important observation. The fact that good scientists had unsuccessfully tried made the 1953 publication even more notable. And, of course, the next step was to confirm this and replicate it and make sure that was a real finding and not a fallacious finding in any way, and that was done over the next several years by many scientists, as I said, including one who is at a -- who was a tobacco scientist, but many others did it as well. And that was an important link, though, as I have also stated, low concentrations, so that significance of benzpyrene -- they were expecting it in high concentrations and in fact it was in low concentrations. So there was not agreement as to what that finding meant; there was still debate about it.

Q. Is it fair to say that at least ten years prior to 1953 that it was fairly well established there was a link between benzopyrene and cancer?

A. There was a link between benzpyrene and cancer that predated 1953, but, as I said before, I have not studied the history of benzpyrene and I do not believe it would be appropriate for me to

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guess or to speculate in proceedings such as this that are as important and significant as they are.

Q. In reviewing the literature from 1930 to 1964, are you comfortable or prepared to offer an opinion on what specific chemicals were known carcinogens at any given time?

A. At any given time? No, I'm not.

Q. Can we take a break.

A. If you wish.

THE VIDEOGRAPHER: Off the videotape.

(Time noted: 2:59 p.m.)

(Brief recess.).

THE VIDEOGRAPHER: We're back on at videotape 1511.

Q. Doctor, do you presently treat patients in the course of your practice?

A. Yes, I do.

Q. Do you treat cancer patients?

A. Occasionally.

Q. Do you consider yourself a cancer specialist?

A. No, I don't.

Q. And you're board certified in internal medicine?

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A. Internal medicine, that's correct.
Q. Is that still true today?
A. That's correct. I'm an internist.
Q. I want to make sure I'm clear on the conclusion you arrived at, at least with respect to the state of the -- and there's been different words used, so maybe you should tell me your conclusion. If I'm the defendant and I'm asking you to express an opinion on the state of whether it be medical or scientific knowledge in 1964 concerning the association between smoking and health, put it in your own words as to what your conclusion would be in this case.
A. My conclusion is that the controversy over the relationship between cigarette smoking and health continued through the appearance of the first Surgeon General's report of January of that year, and that the large-scale scientific controversy that we've been discussing resolved in the aftermath of that.
Q. And could you put a time-frame, a border on the aftermath.
A. I have not studied that in a significant way, in the thorough way that I did before, as we talked about before. I didn't, you know, study in

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that fine detail going forward. We do know that -- and I did learn this from my secondary reading, A) that the Surgeon General's report did lead to the warnings on cigarette packages; number two, we know -- and I know this from my secondary reading -- that the clinical epidemiology gained maturity with this report, and you find the first departments of clinical epidemiology being -- and teachings in the mid 50's.

We do know that, from secondary reading that I've done, that the controversy quieted down, but I also know, we also know, that some responsible scientists who insisted upon experimental verification after -- you know, before it -- before January of '64 -- continued to insist on that afterwards in their own intellectual deliberations, so that it would be important to state that there was room for responsible scientists to disagree even though the controversy as we've talked about quieted down fairly quickly after the report.

Q. Another way of phrasing it, would it be fair to say that at least in the aftermath of the '64 report the majority of reliable scientific evidence established a relationship

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between smoking and lung cancer?

A. I would phrase it a little bit differently, but we're, I think, on the same wavelength here that there was an enormous amount of scientific literature that was assembled by the Surgeon General's report, a new intellectual contribution was made, and in the minds of most scientists, this was sufficient to establish not only the link between cigarette smoking and lung cancer, but actually, more important, the validity and reliability of clinical epidemiology as a science and as something offering methods that could be applied to other conditions besides lung cancer, and this happens afterwards.

And I think that's an accurate description, but, as I also stated, and as you were good enough to mention now, scientists are bright people, they're independent people, and the consensus is often wrong, historians know this, and there was room for responsible disagreement even though the majority viewpoint had switched. If someone didn't accept the majority view point, they -- you can find that contrary view among respectable scientists.

Q. And I want to make sure I

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understand. You've used "relationship" on some occasions, you've used "link" on other occasions. If called to testify in this case, exactly what phraseology are you going to use to show the association between smoking and disease? Is it "relationship," "link," "causation"? Are they all the same in your mind?

A. I'm not quibbling over words, though that's also a time dependent question. Because if you're asking me that, you know, question about an earlier period, it might be important to analyze the word more carefully. But if you're talking January 1964, the first Surgeon General's report, it -- the conclusion of the report, which is accepted clearly by the body of the scientific community, was that cigarette smoking was a major cause of lung cancer, and that the word "cause" was used. And if I've used "link" or other words, there's no meaning to it in the context of the Surgeon General's report. It proved a causal relationship or a cause. The more important point is that, as I said, is that a minority view with responsible scientists in it did continue after the report. Not everyone bought into the new paradigm, even though the majority by that time

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clearly did.

Q. And is it your opinion that it's the retrospective studies which served as the primary basis for those conclusions?

A. Oh, that's totally incorrect.

Q. What is it?

A. It was -- the retrospective studies were among the weaker links. The retrospective studies of 1950 and '51 and '52, and other retrospective studies that were done in later years, that suggested a statistical relationship. The retrospective -- much more important were the prospective studies which were first published, as I recall, in 1954, and then these studies continued. '54 was the first two reports. But by 1964, the Surgeon General cited seven reports, three of which were published after 1960. And, in addition, all but one of the earlier prospective studies had been continued. So as you continued to monitor events over time, put more patients into it and see that statistical associations grew stronger rather than weaker and that these differences bare out, then the earlier studies assumed greater significance, and of course the development of clinical epidemiology and the

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mathematical tools. But putting all of this together: The prospective study and the new mathematical tools that were invented to analyze the data, make sense of the data, that was much more important than the retrospective studies.

Q. As you sit here today, do you know what carcinogens are in tobacco smoke?

A. No, I don't.

Q. As part of your review of the 12 to 14 hundred articles, did you read articles that discussed carcinogens?

A. Well, certainly that -- yes, and that became a topic of interest, particularly after benzpyrene was identified. And then the most important document, in my judgment, is the Surgeon General's report itself, which reviews this literature, and points out, you know, the various known carcinogens that had been identified in cigarette smoke.

Q. In the course of reviewing the literature from 1930 to 1964, did you see literature which pointed out, separate and apart from tobacco smoke, there were certain known carcinogens out there in the world?

A. I'm not sure I understand that question.

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Q. I want to get away from tobacco smoke for a moment.
A. Right.
Q. In the '30 to '64 time period, was there a body of scientific knowledge out there concerning the known carcinogens?
A. Yes. There were known carcinogens, and concern about carcinogens came from various sources: Chemical constituents, chemical causes, and actually this goes back to 18th, 19th century, with scrotal cancer in chimney sweeps, you know, being related to environmental exposures, occupational exposures. So there's a long history of this, and this becomes more worrisome, and in the 50's you've got a general concern about pollution and environment. Remember, Rachel Carson writes her classic book, "Silent Spring," and that gives rise to the environmental movement; you've got lots of concerns in the aftermath of the atomic bomb about radiation and genetic, you know -- the mutagenic effects and carcinogenic effects of radiation. So, this becomes an important field, in and of itself.
Q. Was there a general consensus in the scientific and medical community concerning

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the cause/effect relationship between carcinogens and certain cancers or tumors?

A. This was an area of interest, but it is not something that I studied as part of my work. I looked at tobacco lung cancer link. I did not look at the related but still separate subject of chemical carcinogenesis, chemical carcinogens and look into that. So I'm not able to give an informed answer on that. So it's just not something that I looked at.

Q. Did your review include nitrosamines?

A. I'm not a chemist and I don't remember precisely. I'd have to go through that bibliography that you have a copy of and see the articles. To answer your question, I could also look at the Surgeon General's report, because he lists -- the Surgeon General Committee lists a number of known carcinogens in cigarette smoking. I do not remember if nitrosamines were one of that group or not. If they were, it falls into my testimony, but I don't know that without looking it up and checking.

Q. In terms of arriving at the conclusions you arrived at, was the focus upon the

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cause, association, link between smoking and lung cancer, or did you look at the specific issue of carcinogens in tobacco smoke in a link with cancer?

MR. DODDS: Objection to form.

A. The specific issue was the cause of lung cancer and the effects of cigarette smoke, and that's what I looked at. Issues of chemical carcinogens in cigarette smoke are important, because if you can find carcinogens in the smoke, that adds to the biological credibility of your hypothesis. So, from that perspective, it came into what I looked at, but I did not start doing separate studies on chemical constituents of smoke and other carcinogens and something that might cause cancer of another organ and that sort of thing. That got outside my scope.

Q. Could a medical historian -- is it fair to refer to you as a medical historian? Do you consider yourself a medical historian?

A. Yes.

Q. Could somebody such as you go back, if you were -- had the time and expertise and money and look at the issue and arrive at a conclusion as to what specific carcinogens were

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known to cause cancer at what specific time in medical history?

A. That's a doable study if someone wanted to do it. I haven't done it. I can't answer the question, you know, that one would ask and tell you what would be found. But on the surface, without reflecting on it, that sounds like an eminently doable project.

Q. Is it also possible if you had access to the documents to go back and look at the tobacco industry documents and determine when they knew certain carcinogens did or did not, at least in their mind, in their research, cause cancer?

MR. NEWBOLD: Objection to form.

A. I did lose you on that. Independent of objection, I did --

Q. Assuming you had access to all the tobacco industry documents, as a medical historian, could you go back and review and determine at what specific time a particular scientist within a company or what particular time a company knew what carcinogens were in tobacco smoke, for example? That's a different question.

MR. NEWBOLD: Same objection.

A. Well, as you know, I haven't done that. It

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may or may not be doable. It depends on the nature, number and quality of the documentation. Sometimes you can go to Cornell University School of Medicine and find lots and lots of document about the history of the school and you can go to University of Maryland School of Medicine and find it has a very spotty archive. So, I -- you know, I -- there are really a number of assumptions, all of which would have to be positively answered to do that. The number of documents and how get the documentation was, and cross corroboration, and so forth.

Also, you know, there is an implication in your statement that while maybe they knew something that the rest of the world didn't know, well, it's possible, but you would still have to prove it rigorously and not just allege it. You would have to -- and it would take more than a snippet. You would need confirmation.

I have seen in my whole historical work examples of the misuse of primary evidence. So, Ned Dodds could write a letter and, you know, suggesting Dechert, Price & Rhoades might consider doing this. You could take that as evidence, if

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you wished. Someone from Dechert, Price & Rhoades -- let's do this the other way around. Someone else from Dechert, Price & Rhoades might write a letter and say, "Maybe we should do this." Ned Dodds would read it and say, "I got your memo, but that's a dumb idea; I'm surprised you even thought of it; let's drop it." And the person might write back, "You're absolutely right; I don't know what I was smoking that day and that was the stupidest idea I had." If you were to pick and choose that first letter selectively, it could lead to erroneous suggestions and implications and conclusions. So you really need all the evidence in hard, rock hard unassailable evidence to make such a suggestion.

We also have to remember, putting this in context, that the tobacco scientists, they're chemical scientists and very good, but, you know, they're not biomedical researchers, and the world's scientific community is investigating this very, very intensively, and I personally would be surprised if anyone could find evidence of notable scientific results that were unassailably established and withheld from the

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scientific community would have made a difference if they had been released.

Q. I'm not asking you to jump to the conclusion as to what the effect would have been. I'm asking you, as a historian, could you go back -- and you have to assume for the purposes of my question, you're getting a complete archive of the internal industry documents. But assuming you could do that, could you look at those as a historian and write a report as you have done saying, at this given point in time, this is what this company knew, based upon what I have reviewed?

A. That is possible. Sometimes companies will help you, because they publish, you know, annual reports and research reports and divisions will have reports. So sometimes the record-keeping that a company would do and the reporting it do -- it would be do, would help you. So it is potentially doable, but I do want to emphasize that it is not an easy job, you need a very good set of records, an accurate set of records, that they have to be complete, you need verification, cross verification, and they have to be assessed critically, and it would be totally inappropriate

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if any statement were taken out of context. The responsible historian would be very careful to put any statement in context and verify it before drawing those conclusion. If those assumptions are met, I believe it's a doable study. And there have been such studies with other industries.

Q. Now, you say -- you don't say; a yet-unidentified lawyer says in your report that, "beginning in the early --" and it's page 3 -- "beginning in the early 50's, evidence appeared that raised a scientific concern that cigarettes may be life threatening. At no time between the early 1950's and January 1964, when the Surgeon General's advisory committee's report was released was there a consensus within the medical community that cigarette smoking caused lung cancer, heart disease or other life threatening diseases." Is that -- I mean, I assume this statement still applies today since you adopted this report. It applies to all three of these, lung cancer, heart diseases, other life threatening diseases.

A. Let's me just see that.

Q. That's what I underlined.

MR. NEWBOLD: Just note -- is the question, did he write that in the report?

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MR. MAISTROS: Well, I know he didn't right it because he said a lawyer wrote it.

MR. NEWBOLD: Is the question -- is the question is does that appear in the report?

MR. MAISTROS: Yeah, page 3. That's not the question. The question is:

Q. That's really your statement?

A. I would concur with that. It was the early 50's that the retrospective studies came out. Now you have to put a time dimension at this. The link with heart disease came with the prospective studies. So if you're saying early 1950's, I'd say lung cancer. Mid 1950's --

Q. Well, that's why I broke it up because the sentence starts with the time period and I want to make sure that you're saying that time period applies -- that statement applies and that time period applies to all three of those diseases.

A. It does apply to those -- to lung cancer and heart disease and other life threatening diseases, but the statement does not make clear is that evidence for lung cancer was obtained earlier than evidence for heart disease and other life threatening diseases. The retrospective studies

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published as early as 1950 raise a very serious question that cigarette smoking may cause lung cancer. The connection with heart disease and other diseases was an observation and finding from the prospective study of '54, so we need to make that qualification.

Q. Okay. And earlier you testified, before the break, that it was a significant finding as to the existence of BAP in tobacco smoke. I think you said 53, '54?

A. Benzpyrene.

Q. Right. You didn't say this. I'm just asking you this. So don't think I'm trying to trick you. Is that the first carcinogenic compound that was identified in tobacco smoke?

A. That's correct. To my knowledge.

Q. So as far as the medical world and the medical --

A. Actually it may have been '54. I would have to check the date. I would not want to be quoted. I think it was '53, but may have been -- I think it could have been '54.

Q. Does the '64 report pin the date down?

A. Oh, yes, it did. But I'm just not

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remembering.

Q. No, I know.

A. But, you know, it gives all the dates, all the citations.

Q. So if I found it and read it --

A. Oh, sure.

Q. -- I could find whether it was '53 or '54?

And it's your understanding, based on your review, that that was the first carcinogenic compound that was identified in tobacco smoke, BAP?

A. Benzpyrene. That's my recollection. Certainly was the most significant, because it had high carcinogenic potential. Could a different carcinogen been identified before benzpyrene? It's possible. I'd have to go to the Surgeon General's report. I don't think so, but I want to be accurate. I don't remember for sure.

And also, as I said, there was a problem interpreting the data because the amount -- the amount of benzpyrene was at a low level. It was not sufficient to explain the known carcinogenicity of cigarette smoke. The skin painting experiment, if benzpyrene was the

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constituent, you wouldn't have had those positive results. So scientists -- and the Surgeon General was also puzzled by the low concentrations.

Q. Are you familiar with the categorization of the different chemicals as either being cancer promoting or tumorigenic promoting or precursors? Is there a body out there that establishes standards for those terms?

A. Well, you know, there is a whole chemical industry. I'm not part of that and --

Q. You're not a toxicologist?

A. No, I am really not at all. And certainly as different carcinogens are being identified and as the potential worst culprit of all, benzpyrene, is found only in these low doses, they don't explain the biological effect of cigarettes, it generated discussion of promoters and co-carcinogens, and maybe it's the interaction of the two, and this discussion is also part of the Surgeon General's report. I'm not a chemist myself and I've really gone as far as I can in terms of describing this. I don't work in this area, I'm not a toxicologist, and I could not start giving you all the different definitions

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between producer and co-carcinogen and promoter and this sort of thing, but that is an area of active inquiry and there are fine scientists who could speak directly to that point.

Q. Are you qualified to offer an opinion as to whether or not a substance, if it was a known carcinogen -- it wouldn't matter to the public health community or, in fact, maybe the producer of a product -- that if they knew something was a known carcinogen they would do everything they could to remove it from the product? They wouldn't wait, for example, to find out if it was in the proper dosage amount?

MR. DODDS: I'm going to object to the form of that question.

A. Could you ask that again.

Q. If there's a substance -- and let's assume for the purpose of my question that benzopyrene is a carcinogen -- okay?

A. Uh-hum.

Q. -- if that substance is known to exist in a product, is it fair to say that the medical and scientific community wouldn't wait to determine if it was in sufficient quantities to cause cancer, they would start to work on the

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process of removing it from a product?

MR. DODDS: I'll object to the form and to the scope.

A. The medical community or the industry?

Q. First the medical community.

A. Now you're talking -- your question said medical community, and I'm not sure that the medical community would be involved with product development.

Q. As a medical practitioner, would you be concerned if your patients were consuming known carcinogens?

A. Well, I'm not an expert on carcinogens, so, you know, I want that to be clear, but speaking as with a general knowledge as a physician and a historian, the issue is much more complex than your question allows, because there are many known carcinogens that the government knows about and tolerates, because they're at low levels, and the danger comes at high levels, not low levels. If you were to eliminate all known carcinogens from life, we wouldn't breathe air, because it has oxygen, we wouldn't drink water, because if you drank too much water you would get sick and die, so that whole issue needs to be tempered by dosage

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and by amount and what it interacts with. We all are exposed, with the knowledge of the government and FDA and organizations, to substances that have known effects if misused or if were present in large quantities, but when they are at such low levels, it often it doesn't matter, and that needs to be taken into account in assessing that issue. But I do want to emphasize that, again, I'm not a chemist and I'm not a -- I'm an internist and I'm a historian of medicine. I'm not an FDA regulator and, you know, how low is little? But I do think that qualification should be added to the context of the question you're bringing up.

MR. MAISTROS: Let him switch tapes, because I've got about fifteen minutes and we're going to run out.

THE VIDEOGRAPHER: Off the record at 3:35 p.m.

(Brief recess.)

THE VIDEOGRAPHER: Starting tape 3 at 1538.

Q. On page 4 of the report, entitled, "Expert report of Dr. Kenneth Ludmerer, it is stated that, in the third full paragraph, fourth line from the bottom, "Between the mid 1950's and

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early 60's researchers were unable to identify any agent or combination of agents in tobacco smoke that could account for its alleged cancer-causing activity." By that statement -- you've adopted this statement; correct?

A. I've adopted this statement.

Q. Well, you didn't do the report, so you agree with that statement?

A. Yes, I do. As I mentioned, the report was put together by staffers who were listening to my ideas, and that's precisely what I said before --

Q. That's not my --

A. -- before the break. That you've got benzpyrene. The good news, if you're trying to understand lung cancer and try to put it together with lung cancer, if you're trying to come up with answers, on the one hand you've identified benzpyrene and that's a known carcinogen, but it's at these very low levels that don't explain it's known carcinogenicity. So it raises -- that's what the sentence says.

Q. Are you talking about that they couldn't identify carcinogens or they couldn't identify levels sufficient to cause?

A. No, the levels. After 1953, benzpyrene and

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subsequently other carcinogens in the Surgeon General -- if you wished to know precisely which chemicals, the easiest reference for that is the chapter on this in the Surgeon General's report, which will list all 15 or 18 or 19 or whatever they are. So, 1953 onward, the carcinogens in cigarette smoking have been identified, but science is quantitative, as well as qualitative. It's not just their presence, but their amount, and they were there at such low levels that the levels detected are insufficient to explain the known carcinogenic properties of cigarette smoke, which we knew it had from the skin painting studies. So it raised very serious -- it raised a lot of confusion. There is confusion on that point.

Q. I just want to make sure, as you read the last sentence of the paragraph, it says "the inability to identify these unknown agents was also considered strong evidence against the causation hypotheses in the 50's and early 1960's."

A. By some investigators who were looking for biological credibility, and yes, you found benzpyrene, but, you know, it's in such low levels

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it doesn't count.

Q. That's what I want to clarify. Because as I read the sentence, especially the last sentence, it sounds like you're saying that the actual carcinogenic agents, regardless of the amounts, were unknown. You're not suggesting that, are you?

A. No, they were not known, but it was a question of dose. It was a question of level. It's like saying you're a fellow who stays trim and you don't want to get fat and you were to say to the doctor, if I go out and eat some cake, am I going to gain weight? Are you going to eat the whole cake or a single bite? There are dosage issues in everything in life and it was a dosage phenomenon, a level phenomenon. And they were just -- it's so -- it's such tiny quantities that the quantity at which they were directed was too low with the knowledge at the time to explain the carcinogenic properties of cigarette smoke. If benzpyrene had been discovered at the high levels they were anticipating, then that would have tied together more easily. But it was there so low, it's like you're saying to me, I put on 40 pounds, but I literally -- and I'm not misleading and I

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only had a bite of this and a bite of that. Well, something else must be going on.

Q. And I'm not asking you to rewrite this, but would it be clearer to me or anybody else if you rewrote these last two sentences to make certain that you're talking about the levels of the agents in the smoke as opposed to the inability to identify agents?

A. I think that's a very legitimate point and I appreciate you're making it. Reading it now, it is unclear the distinction between the actual presence and the level. And I think it's a legitimate point.

Q. And if you are asked, could you offer an opinion as to what specific compounds were known between 50's and 60's or not?

A. Oh, easily, and I wouldn't try to remember it, because for all the time I do reviewing, that they're the chemicals slip through like, very easily, but I'd -- you know, the Surgeon General has that. That's easy to reference to it. It's in the Surgeon General's report.

MR. DODDS: Off the record.

(Discussion held off the record.)

Q. Again, if I wanted to I could look

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in the '64 report or you can show me where it is in that report?

A. Sure.

Q. And that would identify at least the known carcinogens that the public or that the medical/scientific community were aware of in January '64?

A. That's correct. There's a whole chapter on that.

Q. And that at least in January 1964, was there consensus in the medical --

A. Excuse me, by the way, not only A chapter on that, but references to all the original papers if someone wanted to pursue it in more detail.

Q. You mean like --

A. It's all cite specific --

Q. What person first found that there was a certain chemical in --

A. Well, you know it would say something like, you know, research -- researchers have discovered benzpyrene, with -- you know, one, two, three, four five, five references in the reports, nitrosamine, six, seven, eight, nine, ten, with the reports to the five papers identifying nitrosamine and so forth. So there is citation to

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the original scientific literature. It's very complete and very useful.

Q. Was it accepted back in the mid 50's to the early 60's that the identification of known carcinogens was an important factor in determining any causal link between a substance and a disease?

A. As I've said, I'm not an expert on the history of chemical carcinogens and haven't studied that, but one -- but the identification of a carcinogen in a substance is now and was then considered insufficient to say that the substance is carcinogenic. You still have to prove that the substance is carcinogenic. Once you do, you start asking the question why. And lots of things we eat have known carcinogens. So the presence alone would not be the issue. You would have to show that the substance itself is carcinogenic, and also you would have to interpret the dosages of the nobody carcinogens.

Q. Isn't it true that in the 50's and 60's and even today there are some carcinogens that the government, United States government, and international bodies, have characterized as unacceptable at any levels, in any doses?

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A. Well, as I've said --

MR. DODDS: Object. Outside the scope.

A. That's way outside -- you know, I have -- way outside the scope what I can -- that I've studied or that I'm prepared to discuss. But, as a general internist, it should be pointed out that -- and I'm speaking in general, in my knowledge as an internist, that -- that as we have already said, the carcinogenic potential of different substances differ. Some carcinogens are known to be extremely potent. Others of less so. And that observation of a range of toxicity among carcinogens, that's correct, but that's really the extent of what I'm able to say, and I couldn't start telling you which ones are which and when were they detected and, you know, what cancers will be produced by this chemical. But carcinogens do differ in their potency. That is a correct statement.

Q. And in page 5 of this report, in the third paragraph -- and, in fairness, you should read the whole paragraph. I'm only going to ask you about the last two sentences, but it's hard to read it out of context. If you could read

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it to yourself.
A. Okay.
Q. This paragraph discusses a -- it starts with at the top of the page a third technique called prospective studies, which you've testified about?
A. Uh-hum.
Q. And in this particular paragraph the report says, in the second to last sentence, "At this time scientists were able to obtain cancers on the backs of laboratory animals, but all attempts to obtain lung cancers in laboratory animals exposed to cigarette smoke had failed." Well, first of all --
A. I'm sorry, where are you?
Q. I'm in the paragraph below that. I'm in the largest paragraph, third paragraph.
A. Which page?
Q. 5.
A. 5.
Q. You're on the right page. You see that sentence at the end of that paragraph?
A. Which sentence are you referring to?
Q. "At this time..."
A. Uh-hum.

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Q. I'm trying to figure out what "at this time" means, first of all.

A. Actually, as we sit here, I'm just raising the question if I saw this. Certainly, in general, it reflects my views, but a number of cases happening at the same time. I don't know if I saw this statement or not. And the questions that I had -- myself have about it, don't at all deal with the general substance. It deals with some of these specifics and qualifications and things of that sort, because I'd be surprised if I didn't correct some of the -- or catch some of those things on my own. If you're talking -- "at this time," in that sentence, "at this time scientists were able to to obtain cancers on the back of laboratory animals, but all attempts to obtain lung cancers in laboratory animals exposed to cigarette smoke had failed," "at that time," in that sentence, refers from -- to late 1953 with the first skin painting experiments, positive skin painting experiments, the Winder and Graham experiments through January of 1964. So you can scratch out "at this time" and put "from late 1953 before the first positive skin painting, through January 1954."

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Q. Did you review the studies that Auerbach did with the smoking Beagles?
A. Yes, I did.
Q. Does that have any relevance to your report?
A. Well, it's relevant because he, as you know, attempted to induce lung cancer in Beagles through actual inhalation of smoke, and it was part of this effort to see if lung cancer could be studied within the framework of the 500-year tradition of experimental medicine. But at least before 1964 those studies were largely unsuccessful. Other sorts of changes, but he was not able to produce clearly unequivocal lung cancer by smoking. Had those studies been positive, my suspicion would be that there would have been quite an ado made of that, but his studies generally did not. They're very significant to the historian because it shows this effort being made to try to study lung cancer experimentally, but it was not a successful experiment.
Q. Do you know if Auerbach ever was successful in inducing tumors or lung cancers in the lungs of Beagles?

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A. I ever not followed that forward beyond 1964.

Q. Did you read any literature on tobacco's reaction to any of Auerbach's studies?

MR. DODDS: Objection to form.

Q. Tobacco industry.

A. Other than the one frank statement that you and others have shown me, I have not read the response or views of the tobacco industry on any subject at any time.

Q. Well, you did list among some of the twelve to fourteen hundred articles you read some advertisements by the tobacco industry, didn't you?

A. I'm sorry, I didn't.

Q. Did you list any advertisements among the --

A. No.

Q. -- twelve to fourteen hundred?

You didn't look at any advertisements?

A. I did not study advertisements.

Q. Press releases?

A. No, I did not study press leases.

Q. Budgets of the tobacco companies?

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A. No, I haven't studied the tobacco industry in any way, shape or form. Those twelve to fourteen hundred articles or whatever they come to, a thousand to twelve hundred, are all scientific studies and not advertising, not press release, not tobacco company documents.

Q. We'll see if we can finish, okay? You mentioned the Sloan-Kettering Institute.

A. Uh-hum.

Q. What is your familiarity with that institute?

A. Memorial Sloan-Kettering, it's a major center of cancer treatment and cancer investigation located here of course in New York City in Manhattan, Upper East Side, across the street from New York Hospital, Cornell Medical Center, worldwide reputation.

Q. As a historian reviewing the status of medical and scientific knowledge concerning the causal relationship between smoking and disease, would it interest you to review internal company documents suggesting that there was an effort to keep scientists such as Widner quiet by funneling money to the Sloan-Kettering institute?

A. Well, as I've said before, there are two

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dimensions to your question. As a historian testifying on the subjects I'm here today to testify on and will testify if asked to, if this case goes to a trial, it would not have been pertinent. The word is not "interest." The correct word is "pertinent." It wouldn't have been pertinent to my subject to start investigating internal company documents when I'm interested in the state of scientific knowledge and the scientific community. It simply would not have been pertinent.

And that, secondly, as I have said before, I don't want to misstate myself. I don't approve of company misconduct. I don't approve of suppression of scientific data or trying to go out and get people as is being suggested by these people. But as a historian, I'm saying, I don't know if that happened or not, and for you to convince me as a historian, one -- and if you're asked -- asking me what would be needed to establish that, you would need some very good evidence, and it would be more than a little snippet from one document. I would really, you know, need to see good evidence that this occurred and then, in some cases, there is also an issue of

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what are the consequences. You know, if there was some trivial experiment that for some reason wasn't published, it probably wouldn't have made the difference, so you would have to ask what are the consequences as well.

So, what you're describing does not sound like very respectable behavior in terms of how, you know, company scientists or Dr. Windner, but I don't have any knowledge of that, but if you're trying to persuade me as a historian, you need to show me real data and you need to show me confirmation, and not just, as I say, a little snippet from millions of documents that very well could be taken out of context and be, frankly, incorrect.

Q. If you had documentation from the tobacco industry that they wrote where they traced the history of an effort to keep scientists such as Hammond, Widner, others, quiet and you had the opportunity to review those documents, would you do so for the purpose of determining whether or not your conclusions in your report in this case were, you know, quote, placed in the context, unquote, of the times?

MR. NEWBOLD: Object to the form.

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Lack of foundation.

A. Again, there are many inaccuracies and incorrect presumptions to that compound question. First of all, studying company behavior -- the questions you are asking, number one, much of it relates to company behavior and not to the state of scientific knowledge. I'm not an expert in company behavior, that's not what I've looked at, that's not what I planned to look at, and even if I were interested, I'm too busy with my own works. It's -- company behavior and the state of scientific knowledge, which I'm here to testify on, based on my work from 1988 and '89, are two entirely different beasts.

Secondly, we also have to know -- secondly, as I've said, just as a general proposition, if any statement, whether admirable or disrespectful -- you know, if you're making any historical claim, the need to have good data and confirmable data, verifiable data, make sure that it's not an exception or taken out of context, all of those qualifications are there.

And, thirdly, I don't accept the premise of the question that people like Winder and the scientific communities could be quieted or

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stopped by the tobacco industry. Everything I've known about medicine and science -- and you're talking some very great individuals -- from my personal involvement as a college student and medical undergraduate, now as a professor of medicine and as well as through my study of history, tells me that you're talking with some bright, in many cases brilliant individuals, with strong minds, strong wills, strong temperaments, who are on a search for truth. They're not going to be quieted by anyone. They're going to express their views. If anything, it would just tick them off. And to think that any company could quiet someone like Doll or Hill or -- someone on either side, I believe strongly misunderstands the nature of science and of the nature of scientists. So I just don't accept that premise without evidence.

Q. Who is Dr. Hammond? Do you come across his name in your research?

A. Dr. Hammond? Dr. Hammond is -- I'm sure you know, was one of the very important U.S. investigators of the subject. I don't think know a lot about him biographically, but his importance in this context is that he and Dr. Horn were the two principal investigators and on the major

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prospective study done in the U.S. with the American Cancer Society and their volunteers, which was one of the very major steps in ultimately demonstrating that cigarette smoking causes lung cancer.

Q. When was that study?

A. Excuse me?

Q. When was that study?

A. My recollection is that it was first published in 1954. But it was continued. So there are actually a number of publications over time. As the patients are followed for longer times, new patients are enrolled, some different -- so there are multiple dates, but the first one I believe was 1954.

Q. Would it be pertinent to your conclusions in this case if you could be convinced or shown evidence that the tobacco companies hired colleagues of Dr. Hammond to embarrass him in the medical and research and scientific area as a result of his studies?

A. Well --

MR. DODDS: Objection to form.

A. I would give the same answer that I've been giving all afternoon: Company behavior is a

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different historical issue than the state of medical knowledge. It would not be pertinent to my study of the state of medical knowledge, from the public -- from the published scientific literature to know whether or not they hindered him in some way or they assisted him in some way. That's really not pertinent.

And then, secondly, I would say again -- and I will say it, because I think this is important to the integrity of history as a discipline -- and I will say it every time you have a question that suggests it -- aside from the fact that behavior, company behavior is different from the state of medical knowledge -- two different topics -- and I'm not speaking on company behavior -- if that had happened, I'm not justifying that, but before we start assuming it happened, one needs to have good historical data that it did. And from the three court trials that I've had and the four depositions that I've had that you miscounted as eleven rather than as seven -- but there's been enough experience to have heard this before.

Q. I said seven.

A. And, you know, these things, if true, would

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raise issues of company behavior and would not affect my area of the study of knowledge. But let's also keep in mind that it's a large task to demonstrate that they're true and I'm just unprepared to accept allegations without any evidence.

Q. You come to Louisiana in January, you get on the stand and you're presented a hundred documents showing destruction of documents, suppression of evidence, buying off of medical associations, would it matter to you at some point whether or not that type of conduct could affect medical and scientific knowledge on the link, association or causation between smoking and health?

MR. DODDS: Object to form.

A. What you have to keep in mind is the context of this controversy. This is not an issue that is being studied by tobacco companies alone or tobacco scientists alone. They did contribute to it and in many cases published articles that were injurious to the tobacco industry by tightening the case. You have to keep in mind that this is one of the most intensively investigated scientific issues of all time.

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You've got all the medical schools, all the teaching hospitals involved, in different departments within teaching hospitals and universities, from basic biology and biochemistry to epidemiology and public health. You've got the university scientists involved, you've got the research institutes involved, such as Memorial Sloan-Kettering. You have the National Institutes of Health involved and various institutes. You have independent clinics, such as Mayo Clinic involved and others. This is -- you have the various scientific health agencies and foundations contributing to this work through their funding and through their expertise, the American Heart Association, the American Cancer Association, the American Public Health Association. These activities are being conducted, not only in the United States, but Britain, France, Germany, Japan, South America, across the world. And to think that the viewpoints of the tobacco companies, the influence, the magnitude of this scientific activity, one way or the other, which has a life of its own, hugely funded, defies credibility.

Q. It's possible to conceive of a

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circumstance where the tobacco companies hired individuals to go over to Europe in the 1950's and 60's to retain scientists that may be adverse to their interests, just so they could be on the tobacco company payrolls at a later date?

A. Could you just say that again.

Q. Do you think it defies credibility to assume that there's a man, hired by the tobacco companies, whose full-time job was to travel around Europe, hiring scientists who may be adverse to tobacco company interests just so the day might come where they say, "You can't testify, you work for us; you're on retainer, you're our consultant"? Is that beyond belief for you?

MR. DODDS: Object to the form. It's beyond the scope.

A. I know so little, you know, company behavior and what's appropriate and what's inappropriate and so forth, that -- and I certainly haven't looked into it -- that I really can't give you a conscientious reply to that, and so far out of the scope, but I would point out that some individuals who had contract grants from tobacco that I know of, such as Dr. Fisher in England, who might be the person you're referring

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to, was the greatest scientific figure in this entire controversy, and to suggest that -- I do know many -- I do know biographically, as well as scientifically, of some of the scientists who were -- who did not accept the epidemiology and who insisted on laboratory verification. In a couple of instances I do know that they had grants or contracts or they had some sort of association with tobacco, but to suggest that these individuals let their funding source interfere with their ideas, again, is incredulous. It's like saying that someone -- Fisher is the Einstein of 20th century biology. It's like saying that Einstein let his funding sources determine his views. It just defies credibility.

Moreover, all views are -- have to prove themselves in the marketplace of scientific ideas, and that's exactly what happened. It's not just that someone says it; but it's subject to critical review.

The -- again, I can't speak at all to company behavior and I wouldn't, but I do think that this type of context has to be brought to bear on the question you're asking.

Q. As a paid consultant for the

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tobacco industry, would you have any problem ethically with representing plaintiffs in tobacco cases?

MR. DODDS: Objection to the form.

A. Well, first of all, as I said before, I'm not a paid consultant to the tobacco industry. I am an -- I'm a university scholar who treats his scholarship seriously and I've been paid for my time and my ideas.

Q. You didn't even write the report you're testifying in this case about.

MR. DODDS: You're arguing with the witness.

Q. Did you write the report you testified in this case about?

MR. DODDS: I object to the interruption of the witness. It's unprofessional.

MR. MAISTROS: I object to him saying he's not a paid consultant.

MR. DODDS: Well, you may not like his testimony, but he's the one under oath, and if you have a question, put it to him; if you would like an answer, let him answer.

Q. Are you paid?

A. I'm paid for my time as a consultant to the

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law firm. I'm paid for my ideas.

Q. Are you paid by the tobacco industry?

MR. DODDS: Asked and answered.

A. I've asked and I've answered that.

Q. Are you a consultant to the tobacco industry?

A. I'm a consultant to the law firm. I've investigated questions. I stand behind this testimony. The testimony is mine, and it's no one else's, even though a couple of little typos got into this report, which I do apologize for, but --

Q. I'm not talking about the typos. Your testimony was that --

MR. DODDS: Could you let him finish?

A. To answer your question, I'm available to anyone. If you would like to retain me for your next case, I'm available.

Q. You wouldn't have any conflicts, sort of rules or ethical sort of rules so that I could pick up the phone tomorrow and retain you in a tobacco case on behalf of smokers? That would be okay?

A. I have one allegiance. That's to my

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ideas. I don't know your case or their case. I have one allegiance. I'm a champion of my ideas and the research that I've done and the ideas I stand for, and if you thought it would be useful to your case to have an historical account of how the causal relationship between lung cancer and cigarette smoking grew, I could just as easily give it for your side as the other. Yes.

MR. MAISTROS: I have no further questions. Thank you.

THE WITNESS: Well, thank you.

THE VIDEOGRAPHER: This concludes today's deposition.

(Time noted: 4:08 p.m.)

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INDEX

WITNESS		PAGE
KENNETH M. LUDMERER, M.D.		
	MR. EVANS: (Direct)	8
	MR. MAISTROS: (Cross)	94

E X H I B I T S

Plaintiff's Ludmerer

NO.	DESCRIPTION	PAGE
1	CV	9
2	Expert disclosure	22
3	Article entitled, "A frank statement to cigarette smokers	75
4	Article from British Medical Journal, London, Saturday December 13, 1952	82
5	Editorial from the New England Journal of Medicine	87
6	Notice of Deposition	95
7	Report in Scott case	125
8	Defendants' Joint Expert Reports Index Volume 4	126

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SIGNATURE OF DEPONENT

I, KENNETH MARC LUDMERER, M.D., do hereby certify that I have read the foregoing transcript of my testimony, taken on October 18, 2000, and have signed it subject to the following changes:

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CERTIFICATION

I, ABNER D. BERZON, a Registered Professional Reporter, Certified Realtime Reporter and Notary Public, do hereby certify that the foregoing witness, KENNETH M. LUDMERER, M.D., was duly sworn on the date indicated, and that the foregoing is a true and accurate transcription of my stenographic notes.

I further certify that I am not employed by nor related to any party to this action.

Abner D Berzon

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